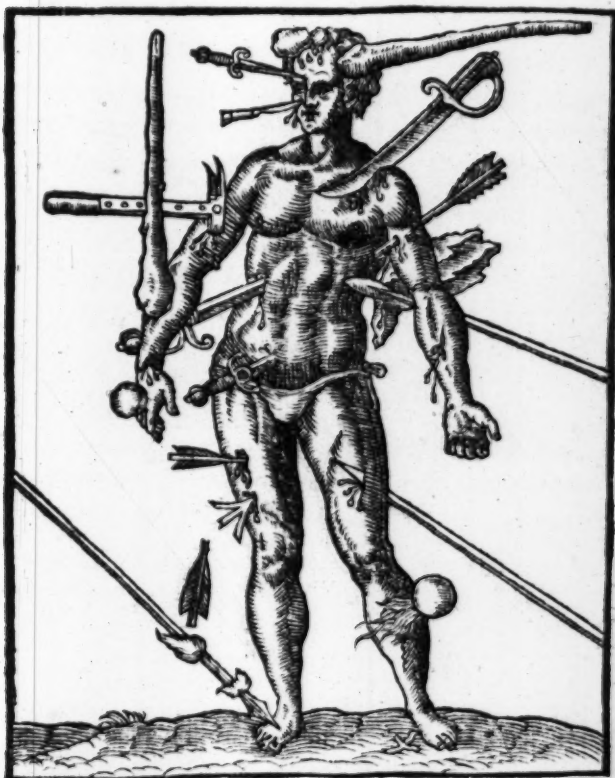


THE Method of Curing Wounds made by Gun-shot.

Also by Arrowes and Darts, with their Accidents.

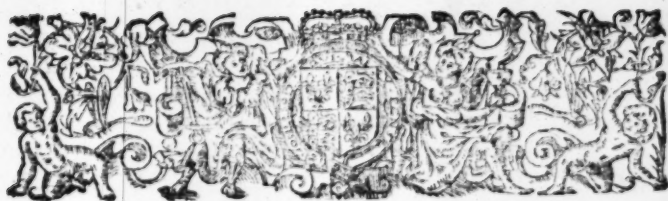
Written by AMEROSE PARIE of Laual, Connfellow and chiefe Chirurgian to the French King.

Faithfully done into English out of the French Copie, by
Walter Hamond Chirurgian.



London printed by Isaac Iaggard, and are to be sold in Barbican. 1617.





TO THE RIGHT
Honourable, Gene-
rall CECILL.

MY LORD,



HE Common-wealth hath bene compared by many (and that verie fitly) to a goodly and well-composed Edifice, which consisteth of manie parts, different both in use and substance; whereof some serue to sustaine the waight of the Building, as Pillars, and such are the Nobility: Others, to containe or keepe the same in an uniformity, as Beames; and such may bee compared to the Magistracy: Others to defend and

cover the frame, from the violence of outward iniuries, as Rafter and Postes, which may be referred to the Comminalty. Now, we doe obserue, that as in all primate Buildings that consisteth onely of these three parts, they cannot bee saide to bee perfect without other things for their finishings; whereof some are Ornaments, and serue but to beautifie; Others for use and necessity. Euen so, in the Publike Weale, besides the three aforesaide principall parts, there are required other seuerall Adornments, which are to be esteemed and respected according to their formall or necessary uses. Amongst the which (Right Honourable) this following Treatise may hold one chiefe ranke (especially in these times) to continue it for occasion. It receyued birth from the lamentable experience

The Epistle Dedicatory.

of the French Ciuill Warres, by that famous and renowned Chirurgeon
AMEROSE PARIE, cherished by diuers Kings of France: and ha-
uing bene gratefully accepted in most part of our Christian World, it doth
now giue it selfe vnder your Lordships protection: put not into fine and
Rhetoricall phrases, but into our home-spun English; such as best sui-
teth with this rough and boysterous subiect. Concerning the worthinesse
of the Author, or woorth of the worke, my testimony would rather de-
tract then adde. Onely thus much, that as amongst all humane sciences
Physicke is the most excellent; and in Physicke, Chirurgie is the most
Authenticke and ancient; so this operation is of Chirurgery the most vr-
gent and necessary, or rather an Abstract of the whole Art of Chirur-
gerie.

Against Obiection, I haue your Lordships patronage for my defence,
and therein I shall thinke my selfe as safe as in an Armour of prooffe;
knowing that it is a point of Greatnesse, as well to defend
the weake, as to resist the
strong.


By your Lordships truly deuoted,

Walter Hamond,
Chirurgian.

To his louing Brethren, the
yong Students and Apprentises in Chirurgery: More especially, those that doe
their Country service on the Seas.

WALTER HAMOND

*One of their Society, wisheth all encrease of
Knowledge.*

 ouing Brethren, and my kind Companions and fellow-Trauellors, you haue heere presented vnto your fauourable acceptance, a Treatise of the cure of Wounds made by Gunne-shot: the worthinesse whereof, I cannot better expresse, then to say *Parie* wrote it; a Man experienced with forty yeeres practise, at that time when *France* did most groane vnder the burthen of the vnciuill *Ciuill Factions*, bred by her home-bred *Enemies*; wherein there was not any notable assault, siege, nor battel fought, but *Ambrose Parie* was chiefly imployed about the cure of wounded souldiers, as hee himselfe testifieth in his owne Booke of voyages and trauels. Accept it therfore thankfully, as a gift from the Author, as it was first intended. And although it may be obiected, that in these peaceable times this *Treatise* is of little vse, and therefore vnprofitable: true it is, and with thankfulness to be ac-

knownedged, we liue in a calme and quiet age,
but is therefore this so necessary and worthy a
Document to be neglected? Because it hapneth
but sildome, wee are the more vnacquainted
with the cure: And as amongst all the *Engines*
that the malice of *Man* could euer inuent for
the ruine of man, Artillery is the cruellst and
most dangerous, because that neither *strength* or
policy are able to preuent the fury therof: there-
fore the *Method* that teacheth vs to cure those
wounds after so easie and excellent a way as is
here described, must needs be accounted most
needfull and beneficiall. But howsoever, I doe
not doubt, but that you my kinde friends, who
with *Galen* trauell to benefit your Country, and
enrich your experiences, that you (I say) doe
know the vse and necessitie of this subiect. And
although there are diuers extant at this time;
yet neuerthelesse, this doeth deserue the best
place in your good opinions, because that the
translation heereof, was first vnderta-
ken for your sakes onely.

Farewell.

Walter Hamond Chirurgeon.



To his most Worthy, and
euer to be respected Master, *Arthur*
Doughton, Chirurgian.

His seruant, Walter Hamond, humblie com-
mendeth and committeth this Treatise of Gun-
shot, unto his most iudicious censure.

(* *)

SONET.

Not for you were my Master (*though that Name*
Shall sway me more then any other can)
Nor out of any priuate hope, or aime,
More then my duty, I engaged am :
But onely for you are a Chirurgian ;
And one whose Practise and Experience
(Two things that Crownes the Artists excellence)
Time and the VVarres, by Sea and Land began.
Then since you are most worthy this respect,
I should be too Ingratefull to neglect
Your wel-tri'de Iudgement (though the enuious grudge)
Yet if with mildest censure you suruay
This following Treatise, I dare boldly say,
P A R I E will haue a fauourable Iudge.

Your Seruant W. H.

To his most Excellent Majesty
Charles the First

James Earl of Mar
Sheweth

THAT

James Earl of Mar
Doth humbly shew

That he is a Gentleman
of the County of Mar

That he is a Gentleman
of the County of Mar

That he is a Gentleman
of the County of Mar

James Earl of Mar



The Preface.



Efore I enter into the Description of Wounds made by Gun-shot, and the Curation of them, it seemeth vnto mee to bee very conuenient, (to bring the Reader into an appetite, before I place him at this Table, serued forth in so many seuerall dishes, seasoned with Salt-peter) to discourse heere briefly of the first Inuentors of this so pernicious & dangerous an Instrument of Warre: And into how many kinde it hath beene diuersified and varied, euery kinde thereof hauing a name imposed thereon, according to his vse and hurtful quality towards Mankind. *Polydorus Virgill* in his second Booke of the Inuentors of things, *Chap. 2.* saith, that *Artillery* was first inuented by an *Alleman* of base condition: and that by a sudden and vnexpected Accident. This man borne for the ruine and destruction of Mankind, hauing kept in a Morter for some certaine intention of the aforesaid Powder (which since by reason of the principall vse thereof hath beene called *Gunpowder*) the which hee couered with a stone: it happened, that in striking of fire with his Steele and Tinder, a small sparke fell into this Morter, and presently the Powder hauing taken fire, the force thereof did beare away the stone with violence; the which did both astonish and amaze him, and also taught him

intention of
the Author.

B

him

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The Venetians had the first vse of Artillery.

Diuers opinions touching the time when Artillery began.

the force of that comixture not knowne before: so that making a little hollow Instrument or Pipe of yron, and composing of the aforesaid Powder, he made tryall of that Engine, and seeing the effect fall out according to his desire, he first taught vnto the *Venetians* the vse of this deuillish inuention, in the Warre which they had against the *Genowaies* in the yeere of our redemption 1380. in a place heretofore called the *Clodian Valley*, but now *Chioggia*. Neuerthelesse, according to the opinion of *Petrus Massa*, in the eight Chapter of the first part of his diuers Lessons, this inuention should be more ancient, because that in the Chronicle of *Alphonfus* the eleuenth King of Castile, who Conquered the *Argezirian Iles*, It is recorded that in those warres, which was in the yeere 1343. the besieged *Moors* shot at their enemies out of certaine Mortors of yron, the seuerall reports whereof, caused an exceeding horrible sound in the ayre, equall vnto that of Thunder. The Lord Don *Pedro*, *Bishop* of Leon, in the Chronicle of King *Alphonfus* hee that Conquered Toledo, writeth, that in a battell by sea, which was betwixt the king of Tunis, and the King of Seuil, a Moore, (it being foure hundred yeeres agoe and more) whose part the King *Alphonfus* fauoured: those of Tunis had in their ships certaine Engines of yron or Bombards, with the which they shot against their enemies. By this it appears that Artillery hath beene heretofore in vse, although it neuer came to perfection till this present. The inuenter of this engine hath had but little recompence, for his name and profession are altogether vnknownen to the world, as being not vnworthy of any memory for such a wicked and damnable inuention. Howbeit *Andrew Theuet* in his *Cosmographie* speaking of the *Suenians*, a people neere about the Low-Countries, writeth out of the

The Preface.

the authority of an old written Booke, that the aforesaid German had been in former time a Monke, Philosopher or Alcumist by profession, of the Countrey of Fribourg: his name *Constantine Anclzen*. Yet howsoever this engine was first called Bombard, by reason of the sound that it causeth: which the Latines conformably doe call Bombus. Since the time of the first inuention thereof, being before rude and imperfect: The time, Art, but aboue all, the malice of men haue added much vnto it. For first of all, for the matter it selfe, it being first of yron, they haue since beene cast of Brasse or Copper, Mettals more forcible, and tractable: besides lesse subiect vnto rust. Secondly, at the first they were but simply formed, and as it were but a rude masse of yron, but since they haue beene diuersified into an hundred fashions, yea vnto the mounting of them on wheeles, to the end that they might be caried with the more swiftnesse, and as it were run to the ruine and destruction of men; The first Mortor pieces not being sufficient or cruell enough to vomit forth fire and shot.

From thence haue proceeded these horrible monsters, as Cannons, doubles Cannons, Bastards, Muskets, Fowlers, and Morter Pieces, &c. These furious beasts of Culuerings, Serpentine, Basilisks, Sakers, Falcons, Falconets, Chambers, Murderers, and infinite other kindes, all of diuers names, not onely drawne and taken from their figure and qualitie, but also from their effects and cruelty. Wherein truly they shewed themselues wise and vnderstood well the thing they vndertooke. I meane those that first imposed such names which are not onely taken from the most rauinous animals, as from Sakers, & Falcons: but also from the most dangerous enemies of Mankind, as from Serpents, Snakes, and Basiliskes, to

The Author
of Artillery
and his name.

What things
hath since bin
added to the
Artillery.

Diuers names
of the Artillery:
& whence
they are taken

The Preface.

shew, that such Engines haue no other vse; and were not inuented for any other end or intention, but onely to destroy suddenly and cruelly the life of man: and that hearing them onely named, we should haue them in horreur and detestation. I omit to speake of other Pieces lesse in body and substance, but in force and cruelty more dangerous. For so much as they can take away our liues neere at hand, and may surprise vs by treason, being without all meanes of preuention: such are the Pistols, Dags, and such like, which easily may be hidden in a mans pocket. Betwixt these two kindes before spoken of, the Harquebuz of Crocke holds a meane, the which cannot be shot off vnlesse it be first bound or fixed in some peece of wood: the Caliuier which cannot be discharged at the cheeke, by reason of their thicke and short stocks, but are helde against the breast. Also the common Muskets all: which haue beene inuented for the commoditie of footmen for shot and bullets. The generall word imposed by the Latines is *Sclopus*, through the imitation of the sound, & by the Italians *Sclopoferre*, by the Frenchmen, Harquebuze, a word also taken from the Italians, by reason of the touch-hole, by which the fire first entreth into the Piece: for the Italians call a hole Buzio, and it is called *Arce* from the word *Arcus* a bow, because they are vsed at this present instead of bowes formerly vsed in the time of warre. For in former time the Archers held the same Front in the battell, which the Muskettiers doe at this present. From this miserable shop and Magazin of cruelty haue sprong these Mines, Countermine, Fire balls, Fire pots, burning arrowes, Lances, and Crossebowes, murderers, wilde Fires, and other hellish inuentions, Bags, Traines, Torches, Circles, Oranges, Grenados, Crossebowes, Chaine shot, Winged shot, and such like. A most miserable

From whence
the word *Ar-*
quebuz is taken.

The Preface.

rable inuention, by the which we sometimes see thou-
 sands of poore men in a Mine pressed to death, and buried
 quicke in the bowels of the earth; others in the heat of Diuers Artificers of Fire.
 battel, being surpris'd with one of the aforesaid Engines,
 doth burne them so cruelly in their Armour, insomuch
 that the water it selfe cannot restraine and extinguish the
 fury of that fire. Thus are both the yron and fire armed
 against vs, to take away our liues through the malice of
 men, for the conseruation whereof they were at the first
 created.

Truly when I heare the engines spoken of, vsed by
 our Ancients, either in their warres or assaults: as their
 Bowes, Darts, Crossebowes; or to force and beat downe
 walles, as their Rammes, Horses, and such like: Me thinks
 I doe heare spoken of children play-games, in compari-
 son of those now in vse. The which, to speake properly
 and truly, doe surpass in figure and crueltie the dread-
 fullest and cruellest thing that can be thought on. What
 can be imagined in this world to be more dreadfull and
 furious then the Thunder? And yet neuerthelesse, the
 ordinary and naturall Thunder is nothing in a maner to
 these infernall engines: which may easily be comprehen-
 ded by comparing the effects of the one with the other.
 Nature would herein honour and priuiledge man in this
 about all other creatures; for man onely dyeth not al-
 wayes being strooke with Thunder: but to the contrary,
 other animals that are subiect to the Thunder, being tou-
 ched therewith, doe die suddenly. For all Animalls be-
 ing strooke with Thunder, do fall on the contrary side:
 Man only dieth not vnlesse he fall on the side stricken, or
 by not being presently turned by force from that side:
 but the Artillery spareth man no more then beasts, with-
 out discretion on what side soeuer it hapned or strooke,

A comparison
 of the Engines
 vsed by our
 Ancients, with
 those of ou.s.

The Thunder
 is not so cruell
 as the Artille-
 ry.

How man
 may be prefer-
 ued from
 Thunder.

Plin. lib. 2.
 cap. 57.

The Preface.

*Pliny lib. 2.
cap. 55.*

What things
are preserved
from the force
of Thunder.

Sueto. in Tib.

Artillery drives
away
Thunder.

on what side soeuer it doth reuerse them, it carrieth away life and all. There are many remedies to preserve a man from the violence of Thunder. For besides those charmes wherein the ancient Romanes put much confidence, beleeuing that thereby the force of Thunder might be coniuured or diuerted. The Thunder-bolts are neuer seene to descend lower then fife foot into the earth; from thence it commeth that those that are fearefull of Thunder doe make themselves Caues or hollow Vaults in the earth, therein to retire themselves as in a place of safetie. It is said also that the Bay tree is neuer strooke with Thunder, and therefore in times past, and is at this day taken for a victorie. Wherefore the Emperour *Tiberius* fearing Thunder exceedingly about all other things, caused himselfe to be crowned with a wreath of Bayes, at the least found he heard in the Ayre. I haue reade also that others for the like occasion haue made themselves Tents of the skinned Sea-calues, because that this Animall hath this gift in particular, neuer to be touched by Thunder. The Eagle is said also to haue this priuiledge about all other foules, neuer to be touched by Thunder, and therefore he is called *Jupiters* bird, as saith *Pliny lib. 2. cap. 54. & 55.* But against the Artillery, Charmes, and Incantations preuaile nothing: neither the victorious Bayes, nor the Sea Calfe, nor any thing whatsoever: no not an opposed Wall it selfe, of ten foot in thicknesse. Briefly, this sheweth the inuincible fury of Artillery, in respect of Thunder in this. For the Thunder may be disipated by the ringing of Bells, the sound of Basons, or by the discharging of Ordinance: For the concussion of the clouds meeting together violently, causeth the Thunder: and by the aforesaid agitation of the Ayre, they are disipated and dispersed. But the fury and pride of Artillery will
not

The Preface.

not be appeased by any thing whatsoeuer. There are some Times and Regions which are exempt and freed from Thunder; for Thunder was neuer seene in the hart of Winter, nor in the midst of Summer, the which happeneth by two contrary reasons. For in Winter the Aire is very thicke, as also the cloudes; and therefore those exhalations of the earth are easily dispersed and distinguished, being of themselves but cold and glaciall. From thence it cometh to passe that the country of Scithia, and other cold countries thereabouts, as Tartary, Liuania, Muscouia, Russia, & other neighbor countries are exempt from Thunder, as to the contrary, Egypt is seldom endamaged by Thunder, by reason of the great heat in those part. For the exhalations and vapours of the earth, which are hot and drie: are conuerted through their vehement heat into small cloudes, which haue no force, as saith *Pliny*. But as the inuention, so is the tempest and damage of Artillery, dispersed as a contagious pestilence ouer all the earth, and at all times the heauens are sensible of the complaining cries of those that feeble the furious effects thereof. Thunder for the most part hath but one blow, but one bolt, and neuer killeth but one man at a time. But Artillery at one blow will massacre an hundred men. The Thunderbolt oftentimes, as being a naturall thing, falleth as it happeneth, sometimes on a rocke, sometimes on a mountaine, sometimes on a Tower, seldome on a man. But the Artillery, being guided by the wicked dexterity of man, coueteth nothing but man, hath quarrell to none but man, him alone hee slayeth, him alone hee chooseth among a thousand other things. The Thunderbolt doth a good space of time giue vs warning by the voyce of Thunder, the forerunner thereof; to aduertise vs of the ensuing tempest: but the Artillery it striketh in Thunder.

The times
which are
without Thunder.

Lib. 3. cap. 50.

Designe and
end of Artillery.

The Preface.

Thunder, and Thundereth in striking; sending assoone his mortall bullet into the bowels, as he doth his sound into the eares. This is the reason why we do, & that iustly detest the Author of such a hurtfull and pernicious inuention: as to the contrary, we ought to esteeme those worthy of great praises, who either by words haue studied to reuoke all Kings and Princes from the practise of such a miserable inuention, or by effects and writings haue studied to ordaine and prescribe remedies to those that haue beene wounded thereby: the consideration whereof hath been a principall motiue to me to write of this matter and subiect. But before my pen shall run in this carriere, I will for the easier vnderstanding of the ensuing Treatise, which I intend to publish, place two discourses in the beginning of the Booke; to extirpate certaine ancient opinions out of the fantasies of many, which seeme vnto me to be altogether false. VVhich errors vnlesse they are first conuicted; it is impossible to vnderstand any thing of the essence of this euill, or to doe any profitable action in the cure therof. The first discourse is addressed vnto the Reader, condemning by manifest reasons, the errors of *Vigo*, who teacheth to cauterize and burne the wounds made by Gunshot, thinking that they did participate of a certaine *venenosity*, to the contrary approving, that those that cure those wounds by suppuratiues, is as *salubrious* and healthfull at that of *Vigo* is cruell and dangerous. The second discourse is addressed to King *Charles* the ninth; vpon speciall command from his Maiestie: shewing that the same wounds doe not participate of any *venenosity*, but that their malignant effects depend wholly on the corruption of the Ayre, and the cacochymic or euill qualitie of the wounded bodies.

The reason
that moued
the Authour
to write of
Gunshot,

The sum con-
tained in the 1.
discourse.

The sum con-
tained in the 2.
discourse.



The first Discourse vpon Wounds made by Gun-shot, and other fierie Engines.

IN the yeere of our Lord, 1536. the victorious King *Frances* sent a great Army vnto *Piedmont* to victual *Thurin*, and to recouer those Townes and Castles which had bene taken by the Marquesse *Du Gualt*, Lieutenant Generall of the Emperor, where Mounſieur the Conſtable, then Great Maſter, was Lieutenant generall of the Army, and Mounſieur *de Monte-jan* captaine generall of the Foote-men (of whom I was then Chirurgian.) A great part of the army arriued at the *Pas of Suze*, wher we found *Pas of Suze.* the enimie keeping the paſſage, and had made vnto themſelues certain Forts and Trenches; in ſuch ſort, that before they could be raiſed from thence, we entred into battell: in which conflict there was many hurt and ſlaine, as well on the one ſide as on the other. But they were inforced to quit that paſſage, and to recouer the Caſtle; which they helde not long, but were compelled to giue it vp; marching away in their ſhirts onely, hauing each of
C them

The first Discourse

The Castle
de Villane
besieged &
taken.

them a white wand in their hands : of whom, the most part went to the *Castle de Villane*, where there was about some two hundred Spaniards. To this castle my Lord the *Constable* drew his forces, because he would make his way cleere before him. It is situate vpon a little Mountaine, which giueth great assurance to those within, that there can bee no Ordinance planted against it to batter it down. They were summoned to restore it vp, or else were threatned to haue it battered in pieces; which they flatly refused : answering withal, that they were as good and faithfull seruants to the Emperour, as Mounseur the *Constable* was to the King his Master. Their answer being vnderstoode, the same night there was mounted two great Cannons, by the force of armes with ropes and cordes, by the Switzers, where (as mis-fortune would) those cannons being planted, a Gunner by indiscretion fired a barrell of Gun-powder, wherewith hee himselfe was extreemely burned, together with tenne or twelue souldiers. Moreouer, the flame of the powder was the cause of the discouery of the Ordinance, whereby those of the castle the night following discharged their Ordinance at that place where they discovered our cannons; in so much, that we had many of our men hurt and slaine.

The morrow after, very early we began the battery, and in few houres after the breach was made; which those of the castle perceiuing, desired a parley, but it was too late; for in the mean time some of our footmen perceiuing them to be astonished,
moun-

of Wounds made by Gunshot.

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mounted the Breach, and entred the castle, putting euery man to the sword, except onely a certaine beautifull *Piedmontese*, which a great Lorde entertained into his seruice. The Captaine and Ancient were taken aliue, but were presently after hanged on the gate of the Towne, to terrifie the rest of the Emperors souldiers, not to be so foolehardy to hold such places against so great an Armie. Now the soldiers of the castle seeing our men rushing in vpon them in such great furie, made all the resistance they could to defend themselves, in killing and wounding a great number of our souldiers with their Pikes and Muskets; where the Chirurgicalians had a great deale of work cut out to their hands.

I was at that time but a yong Chirurgicalian, and but little experienced in the Art, because I neuer (as yet) had seene the curation of any Woundes made by Gunne-shot. True it is, that I had read *John de Vigo* his first booke of woundes in generall, chap.8. where he saith, That those woundes made by fiery Engines, do participate of venenosity, because of the Pouder; and for their curation, hee commandeth to cauterize them with the Oyle of Elders mixed with a little Treacle: yet neuertheless, because I would not be deceiued, before I would vse of the aforesaid boyling oyle, knowing that it brought with it extreame paine to the Patient, I obserued the method of the other Chirurgicalians in the first dressing of such woundes; which was by the application and infusion of the aforesaide

The Author entereth into the matter.

The first Discourse

A remedie
found by
accident.

Oyle as hot as possibly they could suffer it, with Tents and Setons: wherefore, I became emboldned to do as they did. But in the end my oyle fayled mee, so that I was constrained to vse in steede thereof, a digestiue made of the yolke of an Egge, Oyle of Roses and Terebinth. The night following, I could hardly sleepe at mine ease, fearing lest that for want of cauterizing, I should find my Patients on whom I had not vsed of the aforesayde Oyle, dead and impoysoned; which made mee to rise earely in the morning to visit them: where beyond my expectation, I found those on whom I had vsed the digestiue Medicine, to feele but little paine, and their wounds without inflammation or tumor, hawing rested well all that night. The rest, on whom the aforesaide Oyle was applyed, I found them inclining to Feauers, with great pain, tumor, and inflammation about their Woundes: then I resolued with my selfe, neuer to burn so cruelly the wounded Patients by Gunshot any more.

When we entred *Thurin*, I was told of a Chirurgian who was exceeding famous, especially for his curing wounds made by Gun-shot, with whom I found the meanes to acquaint my selfe: yet it was neere two yeeres and a halfe before hee would acquaint me with his Medicine which hee called his Balme. In the meane time, Mounseieur the Marshall of Monte-jan, who was Lieutenant Generall of the King in *Piedmont* died: then I tolde this Chirurgian, that I had a desire to returne to *Paris*, withall requesting him, that he would perform his pro-

of Wounds made by Gunshot.

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promise; which was, to giue me the receipt of his Balme, which he willingly did, seeing that I was to leaue that country. He sent me to fetch him two yong whelpes, one pound of earth-wormes, two pounds of the oyle of Lillies, six ounces of the Terebinth of Venice, and one ounce of Aqua-vitæ: and in my presence he boiled the whelpes aliue in the saide Oyle, vntill the flesh departed from the bones. Afterward, he tooke the wormes (hauing before killed and purified them in white wine, to purge themselues of the earth which they haue alwayes in their bodies:) being so prepared, he boyled them also in the said Oyle till they became dry, this he strained thorough a Napkin, without anie great expresseion; that done, hee added thereto the Terebinth, and lastly, the Aqua-vitæ; and called God to witnesse, that this was his Balme which he vsed in all wounds made by Gun-shot, and in others which required suppuration; withall praying me not to divulge his secret.

From thence I returned to *Paris*, where shortly after Mounsieur *Siluius* Lecturer of the King in Physicke, a man greatly esteemed among learned mē, requested me one day to dine with him, which I did willingly; where hee asked me many Questions, and among the rest, of the essence of wounds made by Gun-shot, and of the combustions made by Gun-powder. Whereupon, I presently proued vnto him, that the powder was not any thing venomous at all; because that no Simple that entreteth therein is any way venomous, much lesse the com-

Gunpowder
not veno-
mous.

The first Discourse of

position. Also I haue seene by experience, that some souldiers being hurt, will take of the sayde powder in Wine, saying; That powder so taken, doth preserue the body from the ensuing accidets, the which I approue not. Also others hauing vlcers on their bodies, do commonly vse of the saide powder dry, and heale them without any danger at all. And as for the Bullets they cannot containe any such heate that they should haue the faculty of burning: for a bullet beeing shot against a stone-wall, it may presently be held in the naked hande, although the collission made against the Stones, should in reason heate it the more: & as for combustions or burnings made by Gun-powder, I neuer found any particular accident in it, whereby the cure ought to bee diuersified from the cure of other combustions. Whereupon, I related this Historie. A certaine boy of the Kitchin, of Monsieur the Marshall de Monte-jan, fell into a Caldron full of Oyle almost boyling hotte; to dresse whom being sent for, I went presently to an Apothecarie, demanding of him such cooling Medicines which are commonly applied vnto burnings: an ancient country-woman being by, hearing mee speake of this burning, counselled me to apply for the first dressing (to preuent the rising of Pustules or bladders) of raw Onions, bruised with a little salt. I demanded of this woman whether shee had euer made experience of that Medicine before: she presently sware vnto me in her language, *Si messé, à la se de dé*; which did incite mee to make experience

Woundes
made by
gunshot are
without
combustion

Historie.

*Yea Sir, by
the Faith of
God.

ence hereof on this Scullion of the kitchen, where truly I found the morrow after, that in those parts where the Onions had touched, to bee altogether free from vessickes or blisters, and the other parts where the Onions were not applied, to bee much blistered.

Not long after, a certaine Dutch-man, one of the Guard of the saide Lord de Monte-jan, hauing ^{Historie.} drunke hard, by indiscretion set his Flaske afire, which caused a great disafter both to his hands and face; and being called to dresse him, I applyed of the saide Onions on the one halfe of his face; and on the other side, of other common remedies. At the second dressing, I founde that part vvhether I had applyed the Onions to be altogether without blisters or any excoriation, and the other altogether blistered: then I first purposed to write of the effect of the saide Onions.

Moreouer, I tolde vnto the saide *Sylvius*, that for the better extraction of bullets which are hidden in anie part of the bodie, it is requisite the patient should be placed in the same situation that he was in at that time when he was wounded. ^{How the patient ought to be situate in the extraction of Bullets.} Manie other things I discovered vnto him, which are contained in this Booke following. My discourse ended, he prayed mee verie earnestly that I would publish it by writing; to the end, that that false opinion of *Vigo* might be altogether abolished: the which I willingly consented vnto, and caused manie instruments to be cut, such as had not bene divulged, for the extraction of bullets, & other vn-
natural

The first Discourse of

naturall things out of the bodie. And it was first imprinted in the year 1545. and well receiued, which caused me to renew it againe, and publish it the second time, in the year 1552. and lastly, in the year 1564. where I haue enriched it with manie other things, because I haue since followed the warres, haue bene in many battels, and besiedged Townes, as in *Metz* and *Hedin*. Also I haue bene entertained into the seruice of fise Kings, where I haue alwayes discoursed with the most excellent Physitians & Chirurgians of those times, to learne and discouer if there were any other Method or way to cure those wounds made by Gunne-shot; whereof the most part (especially those that haue followed the warres, and are guided by reason and experience) are of my opinion, which is to vse Suppuratiues in the beginning, and not boyling oyles. And I did protest moreouer to the said *Syluins*, that I haue found those woundes as easie to cure (being in fleshy parts) as all other great confused woundes are. But where the bullet meeteth with the bones and neruous parts, it teareth, dilacerateth, breaketh, and shiuereth in peeces, not only where it toucheth, but also the circumiacent parts, without any mercy; causing great accidents which happen specially in the iouinctures or ioynts, and in bodies of euill constitution, and in times subiect to corruption; that is to say, where the ayre is hot and moist, then is the cure most difficult, & oftentimes impossible; not only of woundes made by Gun-shot, but also of those which are made by other

The cause
that maketh
woundes by
Gunne-shot
hard to bee
cured.

of Wounds made by Gunshot.

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other instruments, yea, though they were but in fleshy parts.

Therefore, the aforesaide accidents doe not proceede from the venenosity which is in the powder, or by the combustion or burning of the Bullet. For prooffe whereof, I will alledge this History. obseruation which I haue experimented not long since on the person of the Earle of *Cowdon*, Lord of *Achindon*, a Scottishman, whome I cured by the commandement of the Queene-mother, who was hurt with the shot of a Pistoll cleane through both the Thighes, without fracture of the bones; he standing so neere the mouth of the Pistoll, that the fire tooke hold of his breeches; neuerthelesse, hee was perfectly cured in two and thirty dayes, without a Feauer or any other euill accident. I drest him at Sir *Iohn de Lastran*, in the house of the Arch-bishoppe of *Glasco*, then Ambassador for Scotland, who came euerie day to see him drest. Moreouer for testimony, I could produce Moun-
sieur *Brigard*, Doctor Regent in the Facultie of Physicke, who was an assistant with me: together with *Ismaes Guillemeau* Chirurgian to the King, & sworne at *Paris*, who was with mee vntill his perfect curation. The same likewise Moun-
sieur *Han-
zin*, Doctor Regent in the faculty of Physicke can testifie, who sometimes came to see him. Also
Giles Buxet, Scotchman and Chirurgian, euerie of them meruailing how he became so soone cured without the application of hot and sharp Medicines. Now the reasons wherefore I haue made

D

this

The second Discourse

this little Discourse, is to demonstrate that it is aboue thirty yeares ago, since I first found out this manner of curing wounds made by Gunne-shot, without the vse of boyling Oyles, or anie other sharpe or burning Medicines, vnlesse I was constrain'd to vse them for such accidents which happened in *Cascochymed* bodies, or through the euill disposition and malignancie of the ayre, as I will shew more amply in this Discourse following, which I made vnto the deceased King, after the taking of *Roan*.

The





Another Discourse, be-
ing an Answer vnto a certaine De-
mand propounded by the victo-
rious Prince Charles the ninth, as touching
the quality and Essence of Woundes
made by Gun-shot at his Maiesties returne
from the sledge, and taking
of the Towne of
 Roan.

In one day pleased your Maiesty, Occasion of
this dis-
course.
 together with the Queene Mo-
 ther, my Lorde the Prince of La
Roche-sur Ton, and many other
 Princes and great Lords, to de-
 mand of me how it came to passe
 that in these last Warres, the most part of such
 Gentlemen and Souldiers, who were wounded
 by Gun-shot, and other instruments of warre di-
 ed, or were very hardly recovered from their di-
 seases, although the wounds which they receiued
 were but of small apparance, and the Chirurgi-
 ans which were employed for their cures, did per-
 forme their duties according to Art, I haue bene

The second Discourse

the bolder to publish this discourse, to satisfie in some measure the duty of my Art, and that my profession might not be spotted with the least dishonor, and that your Maiesty might vnderstand the reasons which might haue beene the cause of the death of so many valiant men; the most part of whom I haue seene (to my great greefe) to finish their daies pittifully, without any possibility in mee, or any other more experienced then my selfe to giue them remedy.

Insinuation
into the
good accep-
tance of
those who
are of the
contrary o-
pinion.

I know that this following discourse will astonish some, who reposing themselues vppon their owne particular opinions, and not examining the matter deeply, will finde the first front of my disputation very strange, because that the contrarie hath beene so long imprinted in their fantasies. For I do hold, that the cause of the malignancy of wounds by Gun-shot, not to proceed from anie poison or venomous quality in the powder (as they imagine) or from the bullet it selfe, beeing rubbed or infused in any venomous mixture. Neuerthelesse, if their meekenesse and patience will extend so far, as first to waigh the motives which first mooued me to vndertake this subiect, which was a zeal of the publike good; towards the which the Law of Nature bindeth mee to shew the utmost of my power in such things which the singular providence of God hath reuealed vnto mee. And secondly, that they will examine with iudgement the reasons which I shall vse in this present Treatise, then I shall bee sure, they will both accept

of Wounds made by Gunshot.

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cept my labours thankfully, and free it from all future calumny; otherwise they will shew themselves to be so euill affectioned towards me, as if I should present my selfe before them, enriched with all the treasures of the ancient Philosophers, and they should place mee in the number of the poorest and ignorantest men in the worlde. To preuent therefore all the arguments of venome and poisoning, which the aduersaries here about mentioned may alledge, I will make it plaine vnto your Maiesty, that such as are wounded by gunshot, I say the malignancie of such wounds not to proceed from the venom of the Powder, being of it selfe simply considered: and much lesse from the combustion or cauterization which the Bullet so heated by the fire of the powder can make in those parts, which it rendeth & dilacerateth thorough the violence thereof: although neuertheless some do striue to maintaine, alledging for all reasons, that a certaine Tower full of powder hath heeretofore bene seene ruinated in an instant, onely by the meanes of a Cannon shotte. Also of a Thatcht house set on fire with a Musket shot. Moreouer, because that such woundes which are made by Gun-shot, we commonly beholde their Orifices and other circumiacent parts so black, as if an actuall Cauter had passed thereon. As also the fall of a certaine escarre, as they say. Al which arguments are so ill framed, that they deserue no authority being built on so slender a foundation: much lesse that the resolution of your demand

The Author
proposeth
two points,
which hee
would refute.
viz. the poi-
son of the
powder, and
the Fire of
the Bullet.

The second Discourse

should be taken from them, as I trust to give you plainly to vnderstand in the disputation following. The which (after I had seene a great number of those woundes, and diligently obserued them, handling them according to the Method) I haue collected from the ancient Philosophers, Physitians, and Chirurgians to present vnto your Maiesty, and to with-draw your minde from the admiration of the lamentable deaths of so manie braue Gentlemen and Soldiers.

The present
disputation
is taken frō
Philosophers,
Physitians, and
Chirurgians

Now to enter into the matter proposed, and to answer the arguments before alledged, we are first to examine whether there be any poison inclosed in the powder, or no: And if there be, whether it may infect by meanes of the pretended poyson thereof. Which that it may appeare plainly, wee must search into the composition of the said powder; considering that it is not of substance simple, but compound: and so by examining the nature of such Simples which enter into the composition thereof; I meane their qualities, effects, and operations, wee shall the sooner attaine to the scope and intention pretended.

The composition of
the powder.

As for the Simples, it is a most assured thing that there are but three in al which make the composition thereof, that is to say, Coales of Willow or Birch, Sulphure, and Salt-peter, & sometimes Aqua-vitæ: the which ingredients severally considered, are altogether exempt & free from poison, or any venomous quality. And first for the coales, there is not any thing considerable in them,

of Wounds made by Gunshot.

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them, vnlesse it be a drying quality, of subtile substance, by meanes whereof it is apt to take fire, euen as a Linnen cloth burnt into Tinder doth the sparkes that fall from a Flint stone. Sulphure is hot and dry, neuerthelesse not excessiue, and of a more oily and viscuous substance, yet not so easie to inflame as coales, although it doth retaine the fire more forcibly when it is once inflamed, & is very hardly extinguished. As for the Salt-peter, it is such, that many make vse thereof insteede of salt. Now let vs examine whether there be any venosity in the nature of these Simples, namely, in that of Sulphure, which is the most suspected. *Dioscorides* in his fift Booke, chap. 37. prescribeth it to be taken in an Egge, in the astmaticke passion, coughes, and to such which spit matter, and those that haue the Iaundise. And *Galen* in the 9. Book of his Simples, *Cap.* 36. ordaineth it as a topicall remedy, vnto such who are bitten with venomous beasts; and in all malignant practises or itchings; as for the Aquavita, it is a thing so subtile, that it will euaporate if it be set in the aire, besides it is vsed by most Chirurgians inwardlie in drinckes, and outwardly in embrocations as a most singular Medicines. These things considered, makes me to affirme, that the whole composition of pouder is altogether free from venome or poison, seeing that the ingredients are altogether cleere from the least touch in that kinde. Moreover, I haue obserued it to bee the practise of the *Hollanders* being wounded by Gun-shot, to dissolve

Salt-peter
is salt of
stones.

The second Discourse

solue two charges of powder in wine, and to drink it off, hoping by that meanes to be freed from all future accidents which might happen vnto theyr wounds (although I do not approue thereof, because it is a most insufficient remedy.) Also, such Vlcers which are made through the combustion of powder, are of no other nature then those that are made by fire, or scalding water. But wherefore should I alledge any forraigne example? Do we not see among our owne souldiers, I doe not know on what occasion, but onely to shew themselves braue fellowes, to emptie their charges of powder into their cups, and drinke it without any inconuenience at all; and others likewise beeing hurt on any part of their bodies, will apply of the same on their Vlcers to dry them, and finde much profit by it. As for those which do affirme that it is not in the powder, but the Bullet, which being subtilly pierced in many places, or filled vp with venome, or steeped, rubbed, or mixed with anie poyson, causeth the aforesaide dangerous accidents? To such I answer without further trouble, that the fire set to the powder, is sufficient to purifie the poyson of the Bullet, if any there were; the which cannot be done by imployed swords, Pikes, Arrowes, and such like, because they passe not through the action of the fire. Briefly to confirme my opinion to be true, there is not anie one of those that were in your Maiesties Campe at *Raan*, that doeth not assuredly know, that those Bullets which were shot against those of the town

to

Refutation
of those that
affirme the
Bullet to be
impoisoned.

of Wounds made by Gunshot.

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to be altogether free from poison. Neuerthelesse, the besiedged Townesmen affirmed, that all those Bullets were poysoned. Also the Souldiours of your Maiesties Campe had the same opinion of such Bullets which were shot at them out of the Towne, that they were all impoysoned by them; rather beleeuing and iudging of the quality of the wounds by their ill successe; then by the Causes whereby they were made.

True it is, that as in Physicke according to the sentence of *Hippocrates* in the *Epidemies*; as *Galen* noteth on the 20. sentence, and the 21. of the 3 Sect. of the 3. Book, all diseases are cald Pestilentiall and venomous, being excited from common and generall causes of what kinde soeuer they be, and such kill many persons: so in the like manner, we may cal such wounds which are made by gunshot venomous, which are more difficult to heale then others; not because they do participate of any venomosity, but from some generall cause depending either from the *Cacochimie* of the body, putrifaction of the aire, or the corruption of the victuals, whereby those Vlcers are brought to be more malignant *Cacoëthes*, and rebellious to all Medicines.

To affirme that it is only the combustion of the Bullet which causeth the aforesaide danger, I cannot conceue their reasons, seeing that the Bullet is for the most part made but of Lead, and therefore vnable to indure any great heate, without being altogether dissolued, the which we neuerthe-

Refutation
of those that
affirme that
the Bullet
causeth combustion.

E

lesse

lesse see to passe through a coate Armour, and to penetrate the body through and through, and yet to remaine whole. Moreouer, we doe obserue, that if a Bullet be shot against a stone, or against any solid matter, it may in the same instant bee handled of vs in our hands, without feeling anie notable heate, although the violent striking and collission made against the stone, should in reason encrease the heate, if any there were. And which is more, if a Bullet be shot against a bagge full of powder, the fire will not endanger it. This I dare bee bolde to say and affirme moreouer, that if a quantity of powder should take fire being kepte in a Tower, or any other place, by the meanes of a Bullet shot, it was not the heate of the Bullet, but rather the violent striking of the Bullet against the stones of the saide Tower, which might cause sparkes of fire to fall among the powder, euen as the smiting of a Steele against a flint stone. The like we may iudge of such Thatcht houses which haue bene set on fire by a Musket shot, to haue rather proceeded from some wad either of Tow or Paper, ram'd in with the powder, and so fired with it. But that which doth most confirme me in the assurance of my opinion, is, that if a bal of wax be shot out of a Musker, it feeleth no force of fire at all, for then it would melt; neuerthelesse it wil pierce an inch boord. An argument of sufficient weight to proue that the Bullet cannot be so extremely heated by the force of the Powder, that they should cauterize and burne, as many haue esteemed.

An example
of a ball of
wax.

steemed. And as for that blacknesse, which is ordinarily found to bee about the Orifices of such wounds, and other adiacent parts. I say that this accident doeth not proceede from any qualitie of fire accompanying the Bullet, but because of the great contusion which it maketh. For it cannot enter into the body otherwise then by an extreme and incredible force, because it is of a rounde figure. Vpon this point, if the wounded persons themselves be demanded, I beleue they will testifie the truth of my saying; because they are no sooner strooke with the bullet, but they feel in the same instant, as if a club or some heauie burthen were fallen vpon the offended part, in the which they feele a heauy paine, with a benumbed stupifaction of the part; which dissipateth and sometimes extinguisheth the naturall heate, together with the spirits contained therein: from whence there followeth oftentimes a Gangrene and mortification of the part, yea sometimes of the whole body. And as for the Escarre which they affirme there to be, and fall away as they say, they doe abuse themselves: for it is onely some certain portion of the Membranes and contused flesh, dilacerated by the Bullet, which becommeth corrupted, and so separateth it selfe from the sound parts which are greatly contused.

Whence it
proceedeth,
that wounds
made by
Gunshot
are ordinari-
ly blacke.

Although that these Reasons do make it manifest enough, that there is no venomous quality in the powder, nor action of fire carried with the Bullet, neuerthelessse many building their opini-

Reasons of
thole of con-
tra yopiniō

ons vpon naturall Philosophy, doe maintaine the contrary, affirming that Cannon shot is like vnto the claps of Thunder which burst forth of the clouds in the middle Region of the aire, and so fall violently on the earth. From the which similitude they would infer and conclude, that there is both fire, and a venomous quality in the Bullet, as it proceedeth out of the mouth of the Cannon. I know (I thanke God) that Thunder being ingendered from a grosse and viscuous exhalation, by meanes of vapour conioyned with it, doth neuer breake forth of the clouds to penetrate heere below, but it draweth and bringeth immediatly with it a certaine fire, sometimes more subtile, sometimes more grosse, according to the diuersitie of the matter, whereof the exhalation is composed.

Seneca.
3. Kindes of
Thunders.

For *Seneca* writeth in the second booke of his naturall questions, chapter 49. that there are three kinds of Thunders all differing the one from the other, according to the quantity and manner of their inflammation. The first, by reason of the matter thereof, it being most thinne and subtile, it doth pierce and penetrate suddenly the Obiectes which it toucheth. The second kinde, by reason of the violence thereof, breaketh and dissipateth the same thinges because that the matter thereof is more violent, and compact as a Tempest. The third sort being composed of a more earthy matter, burneth with manifest tokens of the heat thereof. I also know, that the Thunder is of nature Pestilentiall and fætide, because of the grosse and slimie

mie matter thereof; which being burned, leaueth
behinde it such a stinking sauour, that all animals
do so much auoide it, that if it do happen to fall
into their dens, or other places of haunt, they wil
vtterly abandon and forsake such places; so much
do they hate the infectious stinke of that poyson.
The same is noted by *Olaus Magnus*, in his Sep-
tentrionall History, that in certaine places where
Thunder hath salne, presently after the fall there-
of, the fields haue beene found afterwards to bee
couered and strewed ouer with sulphure; neuer-
thelesse vnprofitable, and almost extinguished.
For all these reasons, I must not confesse that the
blowes of Gun-shot are accompanied with poy-
son and fire, as the claps of Thunder are. For al-
though they doe agree the one with the other, in
some similitude, it is not therefore in theyr sub-
stance and matter, but rather in the maner which
they haue to batter, teare, and dissipate the ob-
iects which they meeete with, that is to say, the
claps of Thunder through the force of fire; & of
the bolt or stone sometimes engendred therein:
and the blowes of Gun-shot by the meanes of the
aire forced away by impetuosity, and so conduc-
ting the Bullet causeth the like disaster. What if I
should be conuicted by stronger arguments, so
that I were inforced to auouch that Thunder and
the Cannon to be of like substance; yet I shoulde
neuer be forced to say, that the shot of Cannons
and Muskets do participate of a fiery quality. *Pli-*
ny saith in the second Book of his History, and the

Answer to
the contra-
ry Reasons.

The second Discourse

§ 1. chapter, that among Thunder one kinde is composed of a meruailous dry matter, dissipating all such thinges it meeteth withall, neuertheless without any signe of burning: others, of a more humid nature, which in like manner burneth not but blacketh and discoloureth much more then the first. And others are composed of a very cleere and subtile matter: the nature wherof is most meruailous, forsomuch that it is not to bee doubted (as *Seneca* hath well saide) that there is therein a certaine diuine vertue: and it is in melting Golde or Siluer in a mans purse, the purse it selfe not being so much as touched therewith. Also in melting a sworde, the scabberd thereof remayning whole. Also in dissoluing into droppes the Iron head of a Pike, without burning, or so much as heating the woode. In shedding the wine out of a vessell, without burning or breaking of the caske. According to the aforesaid testimony I can assure you, and that without any preiudice, that those Thunders which onely breake and dissipate without any burning; and such which leaue effects full of great admiration, not to be much vnlike in substance to the Cannon shot, and not those which carry immediately with them the action of fire. To proue my saying, this one example shall suffice. A certaine souldier receiued a wound in his Thigh with a Musket shot, from when I extracted a bullet; the which being wrapped in the Taffatie of his breeches, made a very deepe wound. Neuertheless I drew it forth of the wound with the same

A meruailous effect
of Thunder.

Example.

same Taffatie, it being without any signe of burning.

And which is more, I haue seene many men, who not being shot, nor any thing touched therewith, vnlesse it were in their apparrell onely, haue receiued such an astonishment by a Cannon shot that onely past neere them, that their members thereby haue become blacke and liuid; and shortly after haue falne into a Gangrene and mortification, whereof in the end they haue died.

These effects are like vnto those of the thunder before spoken of. Neuerthelesse, there is not in them any fire or poison: which maketh mee conclude, that there is no poison in the common and ordinary powder. Seeing therefore that this disaster was common to all those which were hurt in these last warres, and yet neither by fire or poyson that so many valiant men died. To what cause may we impute this euill? I am so confident of the true cause my Liege, that I hope presently to make your Maiesty vnderstand the same, to the end that your demand may be fully satisfied.

Those which haue consumed their age and studie in the secrets of naturall Philosophie, haue left vs this among other things for authentick and approved of all times. Which is, that the Elements do synbolize in such sort the one with the other, that they doe sometimes transforme and change themselves the one into the other in such sorte, that not onely their first qualities, which are heat, coldnesse, diuinesse and moisture: but also they
sub-

The second Discourse

substances are chaunged by rarification or condensation of themselves; so the fire doth conuert it selfe ordinarily into aire, the aire into water, the water into earth; and contrarywise the earth into water, the water into aire, and the aire into fire. The which we may dayly behold and proue it by those bellowes of Copper which the Dutchman brings vs, being composed in the form of a Boll, the which being filled with water, and hauing but one hole in the midst of the Sphericall forme thereof, receiueth the transmutation of the water within it into aire through the action of the Fire, neere vnto the which the Boll must be placed; and so thrusteth the aire forth of it with violence, making a continuall noise or sound vntill all the ayre be gone forth of it. The like may bee knowne by Egges or Chestnuts: for either of them being put into the fire before they are crackt, or the Rindes broken, presently the watery humidity contained in them doth conuert it selfe into ayre, thorough the action of the fire: and the aire in making his passage bursteth the shell, because it occupyeth more place being in the forme of aire, into the which it was chaunged by rarification caused by the fire, then it did vnder the forme of water; and not finding passage is constrained to make one by violence, according to the proposition helde for most certaine among all Physitians; that is to say, of that one part of Earth is made tenne of water: and of one part of water is made ten of aire, as of one part of aire ten of fire. I do say and affirme so much

much of the matters contained in the saide Gunpowder, which by meanes of the fire is conuerted into a great quantity of aire; the which because it cannot be contained in the place where the matter was before the transmutation thereof, is compelled to yssue forth with an incredible violence: by meanes wherof, the Bullet breaketh, shiuereth and rendeth all that euer it meeteth with, yet doth not the fire accompany it. Euen as we see a Bow, or a Sling shoote forth an arrow or stone, without any aire at all. But the bullet driueth before it such a subtle winde, and so swiftly agitated that sometimes the very wind it selfe without the action of the bullet causeth strange and wonderfull effects. For sometimes I haue known it make a fracture in the bones without any diuision of the flesh. And heerein it may be compared as we saide before vnto the effect of Thunder: euen so we see, that if the saide powder bee inclosed in Mines and Vaults of the earth, and being conuerted into aire through the action of the fire set vnto it, how it doth ruinate and reuerse huge masses of earth almost as bigge as Mountaines. Also in this yeare, in your Maiesties Town of *Paris*, a certaine quantity of powder, bur newly made in the *Arrenall*, by taking fire caused such a great Tempest, that the whole Town shooke at it: for with an horrible fury it leuelled with the Earth all the houses neere vnto that place, and discovered and battered downe the windowes of all those houses that stood within the fury of it. And to bee brieue

The effect
of Artillerie
like to the
Thunder.

The second Discourse

(even as a clap of Thunder) it did reuerſe here & there many men halfe ſlaine; taking away from ſome their eyes, from others their hearing, and left others no leſſe torne and mangled in their members, then if foure horſes had drawne them in peeces: and all this by the only agitation of the aire, into which ſubſtance the powder was conuerted. The which, according to the quantity and quality of the matter thereof, and according to his motion, either more or leſſe violent, hath cauſed ſo many won'erfull accidents in our Prouinces; altogether like vnto thoſe which are cauſed through the incloſing of winds in the bowels and cauities of the earth not being perſpirable. The which ſtriving to haue vent, bloweth with ſuch a ſtrong and violent agitation, that they make the earth to tremble and quake thereat: thereby deboliſhing Cities, and ruining buildinges, and transporting them from one place to another. As the Townes of *Megara* & *Egina*, anciently much celebrated in the Countrey of Greece, periſhing by Earth- quakes can witneſſe vnto vs.

I omit to diſcouer (as but little ſeruing to our purpoſe) how the wind incloſed in the Entrailes of the Earth, maketh a noiſe of diuers ſounds, & very ſtrange according to the diuers forms of the conduits and paſſages through the which it yſſueth by, even after the manner of Muſicall Inſtruments; the which being large, do giue a great and baſe ſound, and being narrow do make high and ſharpe nores, and being crooked or replied make
di-

diuers sounds ; as wee see by experience in the Huntsmans horne, and in Trumpets, the which also being moystened with water, do make a hollow gurguling sound.

In like manner, these noises, murmurings, and clamors are sundry wayes diuersified, according to the places whence they proceede ; in such sort, that sometimes hath bene hard a clamorous crie, representing (as it seemed) the assault of a City, the cries and lowings of Buls, or the neighing of Horses, roaring of Lyons, sound of Trumpets, reports of Artillery & many other dreadful things; yea sometimes humane voices. As it is reported by one, who had heard a voice (as it were) of a woman a beating, which made (as he imagined) such a wofull and greuous lamentation, whereby he became so greatly affrighted, that hee had scarcely breath sufficient to make this report. But when he had well vnderstoode the cause of this plaintiue voice, he was presently deliuered from that fear, which otherwise might haue killed him.

Diuers
sounds yssu-
ing out of
the veins of
the earth.

But some perhappes will say, that these things haue alwayes bene, and no lesse ordinarie in the times past, then they are at this present: and therefore it is a great folly in mee to alledge them, for efficient causes of the death of so many men. The which imputation I should freely confesse, if I should present them for such : but seeing that by them I would o rely paralel and compare the impetuosity of Artillery with that of Thunder, and

The second Discourse

the motions of the earth; which beeing so, it will appear that it maketh nothing against my first intention, as I hope to demonstrate cleerely, that I am slandered without a cause, if you please to give care to the deduction following. In the which, I will plainly and briefly describe the true causes of the late mortality which happened among your Highnesse Soldiers.

The true explanation of the question.

Amongest the things necessary for our lives, there is nothing that can more alter our bodies then the Aire; the which continually (willing or unwilling) we inspire by those Conduites which Nature hath appointed for that end, as the mouth, the nose, and generally through all the pores of the skin and Arteries therein infixed, whether we eate, drinke, watch, or sleepe, or doe any other action, whether Naturall, Vitall, or Animal. From thence it commeth, that the aire inspired into the Lungs, the Hart, and the Braine, and vniuersally in all the parts of the body to refresh and in some measure to nourish the same, is the cause that a man cannot liue one minute without inspiration; according to the which wonderfull benefite, the excellent Physitian *Hippocrates* hath pronounced and that truly, that the Aire hath a kinde of Diuinity in it; because that in breathing and blowing ouer all parts of the world vniuersally, it doth circumuolue all things therein contained; nourishing them myraculously, strengthening them firmly, and maintaining them in an amiable Vnion, altogether symbolizing with the stars & Planets;
into

Hyp in the Preface of his Prognost

into the which the diuine prouidence is infused ; which changeth the aire at his pleasure, & giueth it power not onely ouer the mutation of times & seasons, but also of the alteration of naturall bodies. And therefore the Philosophers and Physitians haue expressely commanded, that wee should haue a principall regarde vnto the situation and motions of the heauenly bodies, and constitutions of the aire, when the preservation of health, or the curation of diseases are in question : but especially the course and mutation of the Aire is of great power, as we may easily iudge by the 4. seasons of the yeare. For the Aire being hot and dry in Sommer, our bodies in like manner doeth thereby become heated and dried : and in winter the humidity and coldnesse of the aire doeth likewise fill our bodies with the same qualities; in such order neuerthelessse, and in so good a disposition of nature, that although our temperatures seeme to be changed according to the foure seasons of the yeare, wee neuerthelessse receyue no harme thereby, if those times do keepe their seasons and qualities free from excessse. But to the contrarie, if the seasons be so peruered that the Sommer is cold, and the Winter hot, and the other seasons in the like distemperature, this discord bringeth with it a great perturbation both in our bodies, and in our spirits, constrained neuerthelessse to receiue the danger, by reason that the causes are extreme, and do on euery side encompass vs; so that we are constrained to lodge it in vs by those

Hyp. in the
beginning
of his booke
*de Aere locu
et aqua.*

The alienation of seasons cause of diseases.

ganes and Conduits appointed by nature to that end; as partly, to expell the superfluous excrements of our nourishment, and partly to receiue the saide externall causes, which is the ayre or winde, producing in vs diuers effects, according to those parts of the world from whence they do proceed. For it being so that the Southerly winds are hot and moyst; that of the North cold & drie; the Easterly winds for the most part are clere and pure; and the Westerly cloudy, and subiect vnto raine; yet it is a most assured thing, that the Ayre which we do inspire continually, holdeth in all, and through all the quality that is most predominant. And therefore we should of necessity consider in all diseases, and the inconueniences which happen therein, the quality of the windes and the power which they haue ouer our bodies; as *Hippocrates* hath learnedly left vs by writing, in the 3. Booke of his Aphorismes, Chap. 5. and 17. saying, That our bodies do receiue a great alteration through the vssitude of the times and seasons of the yeere. As by the South-wind our bodies are subiect to all diseases, because that moisture is their primitiue cause: it also weakeneth our naturall heate, the which in the opposite case is much fortified through a cold and dry wind, which also maketh our spirits more quicke and subtile. The verity of which sentence, the inhabitantes of the territory of *Narbonne* doe too much experiment to their damage. For being themselves between the lustiest and healthfullest people of all *France*; yet

of Wounds made by Gunshot.

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yet neuerthelesse they themselves are very sickely for the most part, their bodies leane, their countenances sad and heavy; their faces rawny, or of an Oliue colour, do manifestly shew the same. Also among other diseases, they are almost all subiect to the white Leprosie; and the least Vicers which they haue, which wee make no account of at *Poitiers* or *Paris*, do ordinarily continue with them a whole yeere together. Not for any other cause, as they themselves confesse, and as al strangers know that haue liued in their Country: but onely because they are for the most part, blasted and breathed vpon with a Southerly VVinde, which in their language they call *A'san*, and maketh the aire to be grosse and cloudy; causing in their bodies al the effects which are attributed by *Hippocrates* to the Southerly windes, in his thirde Booke and 5. Aphorisme, that is to say, when it reigneth it dulleth the hearing, dimmeth the sight, swelleth and aggrauateth the head, weaknieth and abateth all the forces of the body.

Also, when *Hippocrates* compareth the temperatures of the one quality with the other, he resol-
ueth vpon this point; That the dry seasons are far more heathfull then the humid: that haue continued for a long succession of time, because excessive humidity is the true matter of putrifaction, as experience telleth vs: For wee see, that in those places where the Marine or Sea-winds haue blowed long, all kinds of flesh (though neuer so new & fresh) will corrupt in lesse then an houre. These things

Lib. 3. Aphor.
19.

The second Discourse

things being considered, that it is most necessary for the conseruation of our bodies in health; that the seasons should follow their naturall temperatures, without any excesse or contrarietie, there is no doubt to be made but that our bodies will fall into many vnnaturall diseases, when the natural qualities of the seasons are peruered through the euil disposition of the aire, and wind that predominateth therein. It being so that for these 3. yeares space heere in *France*, the seasons of euerie yeare haue not kept their ordinary qualities. In the Sommer we haue had but little heate, in the Winter a little or no cold at all. Also the other seasons haue bene continually distempered with raine and moysture, together with much Southerly windes, whose nature wee haue declared before; and this throughout all *France*.

I know no man so little seene in naturall Philosophy, or in Astrologie, which will not finde the aire to bee the efficient cause of so many euilles, which for these three yeeres space haue happened in the kingdome of *France*. For from whence should proceede those contagious Pestilences, which happened indifferently to olde and young, to rich and poore, & in so many places, but from the corruption of the aire? From whence should proceede so many kinds of Feauers, Pleurifies, Apopsthumes, Catarres, defluitions of smal Pox & Meazels? So many kinds of venomous Beasts, as Frogges, Toades, Grashoppers, Caterpillers, Spiders, Flies, Waspes, Snailles, Serpents, Vipers,

pers, Snakes, Lizards, Scorpions, and Aspickes; but onely from a putrifaction resulting from the humidity of the aire, accompanied with a languishing heate. This is it (I say) that hath engendered in vs, and in all the Countrey of *France*, so many strange and vnknowne accidents. Beholde therefore how our naturall heate hath bene weakened, how our blood and humors haue bene corrupted through the malignity of the aire, which these Southerly winds hath caused thorough the hot and moist quality thereof.

Thus much I haue obserued, that where there hath bene neede of Phlebotomizing, there hath beene but little blood drawne from any, whether they were yong, or olde, wounded, or not of so good or euill temperature; but it hath bene corrupted, & appeared of white or greenish colours. This I haue alwaies obserued in these last warres, and in other places where I haue beene called to cure the wounded: such as haue beene phlebotomized by the prescription of the Physitian, either for the preuention of accidents, or the furtherance of the cure. In all which, I say indifferently, I haue found the bloode putrified and corrupted. This being so, it must needs follow that the fleshy parts of our bodies cannot bee otherwise then euilly disposed: and all our bodies Cacochymate, seeing that their nourishment which is the blood is putrified, and the aire altogether corrupted. From whence it followeth, that those bodyes which were wounded in the fleshy parts were dif-

A similitude

ficult to cure, considering that there was in the m
a perdition of substance; the which having neede
of the regeneration of the flesh, could not be ac-
complished neither by Medicines, nor any Art of
the Chirurgicalian, such and so great was the Caco-
chimy or euill constitution of their bodies. Euen
as in an Hydropticke person there can no flesh be
regenerated, because the blood is too colde and
watery: and in the Elephanticke or leproous Di-
sease, the flesh and other parts do abide in putri-
faction, because of the corrupted bloode where-
by they are nourished. In like manner, in wounds
of Cacochymed bodies, there can be no regene-
ration made of any good substance, because that
to restore a lawdable flesh in the wounded part,
it is required that the bloode should not offend
neither in quantity nor quality, and that the of-
fended part be in its naturall temperature. All
these things wer wanting in the times of these last
warres: and therefore it is not to be wondred at,
if the wounds which were then receiued (although
they were but small and of little consequence in
the noble or ignoble partes) haue brought with
them so many tedious accidents, and in the end
death; because that the aire which doeth incom-
passe vs, maketh the wounds to bee corrupt and
putrified, by reason of the inspiration and trans-
piration thereof, especially when it selfe is cor-
rupt and putrified by altering and corrupting the
humors.

Of this point I haue had the experience of ma-
ny

ny woundes which I haue beene called to dresse that haue rendred a most insupportable stinking fauour, as a certaine witnesse of corruption and infection, inſomuch that the aſſiſtants could hardly endure to be preſent at their dreſſings. It neede not bee heere alledged, that this was for want of being cleanly kept, or often dreſſing, or for not adminiſtering vnto them things neceſſary: for this corruption was as common to Princes and great Lords, as vnto poore Souldiours; whoſe woundes (if by chance one day eſcaped wherein they were not dreſt, ſo great was the number of the hurt ſouldiers) you ſhould find in them the morrow after, a great quantity of Wormes, with a meruailous ſtinking fauour. And moreouer there happened vnto them many Apoſtumes in diuers parts of their bodies oppoſite to their hurtes. For, if they were ſhot in the right ſhoulder, they ſhould haue an Apoſtume on the left knee; and if the wound were in the right leg, the Apoſtume would ariſe in the left arme. As it hapned to the late King of *Nauar*, to Mounſieur *de Neuers*, and to Mounſieur *de Renda*, and almoſt to all others. So it ſeemeth, that Nature being ſo much oppreſſed with corrupted Humors, could not be ſufficiently purged and diſcharged of them by woundes onely, but ſent ſome part of the corruption to ſome other part either hidden or apparent. For if the Apoſtumes appeared not outwardly, they ſhould be found in the inwarde parts, as in the Liuer, Lungs, or Spleene. From

Intollerable
ſtinke proceeding from
the wounded parts of
men.

Venomous
Wounds.

The second Discourse

those putrifaCTIONS were stirred vp certain vapors, which through their commination with the Heart causeth continuall Feauers; with the Liuer a let and hinderance of the generation of good blood; and with the Braine, swoonings, faintings, convulsions, and consequently death.

Now because of those aforesaide accidents, it is vnpossible for any Chirurgian (were he neuer so expert) to correct the malignity of the aforesaid wounds: neuerthelesse those that are employed therein ought not to be reprehended, because it is impossible for them to war against God, nor against the aire, wherein oftentimes are hidden the rods of his Diuine Iustice. If therefore according to the sentence of ancient *Hippocrates*, who saith; That all contused wounds ought to bee brought to suppuration, thereby to bee perfectly cured; which method we are sometimes constrained to change, because of the putrifactionous Gangrenas and Mortifications which doe accompanie such wounds, through the corruption of the aire; and can any blame or accuse vs, because wee are constrained through necessity to change & alter that manner of curation, and instead of suppurative Medicines to vse other remedies, to resist such accidents which not onely happen in wounds made by Gun-shot, but also by swords or staves: which remedies shall bee described in this present Discourse. Besides humane causes, that man is ill instructed in the knowledge of Celestiall things, which doeth not belecue for certaine, that the
wrath

of Wounds made by Gunshot.

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wrath of G O D hangeth ouer vs to punnish the faultes which ordinarily we commit against his Maieſty ; his ſcourges are prepared readie, his rods and weapons haue their miniſters alwaies at hand to execute the commandement of his Diuine Juſtice, into whoſe ſecrets I dare enter no further ; but will conclude with the opinion of the beſt aduiſed Praſtioners, that the principall occaſion of the aforeſaid mortality, did proceed from the iure and determinate will of God, who by the temperature which he hath giuen to the ayre and winds (as the Heralds of his diuine Juſtice)

hath made vs apt to receiue the afore-
ſaid inconueniences, which we
haue incurred by our
iniquities.

G3

CHAP.



THE
*Method of curing Wounds made
 by Gun-shot, and other
 fiery Engines.*

Also by Arrowes, and Darts, and
 their accidents.

CHAP. I.

*The diuision of woundes, according to the diuersitie
 both of the offended parts, & the Bullets where-
 by they were made.*



ALL Wounds made by Gunshot
 on the body of man, whether
 they be simple, or compounded
 with dilaceration, contusion,
 distemperature, and tumor, are
 made some in the noble parts,
 others in the ignoble parts; some in the fleshie
 parts, and others in the Neruous and bony parts;
 sometimes with ruption and dilaceration of the
 great vessels, as of the Veines and Arteries, and
 sometimes without ruption of them. Such kinde
 of

The diuision of Wounds.

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of wounds are also sometimes superficiall, but most commonly profound and deepe, yea, *even* to the penetrating through the body & members of them that receiue them.

Differences taken from the matter of Bullets.

Another diuersity is taken according to the differences of the Bullets: amongst the which, some are great, some in a meane substance, and some are small as Haile shot: whereof the matter (which is ordinarily but of Lead) is sometimes turned into Steele, Iron, or Tin, rarely into Silver, but neuer into Gold. According to the which differences, the Chirurgian ought to take diuers Indications to operate, and according to them to diuersifie the remedies. Now we ought not to iudge those great accidents which happen in these wounds to proceede from the combustion of the Bullet, nor from the venonosity or other ill quality of the powder, because of the aforesaide Reasons alledged in the precedent Discourses, but because of the contusion, dilaceration, and fraction which is made thorough the violence of the Bullet in the neruous and bony parts. For when it hapneth that the Bullet toucheth onely but the fleshy parts, and in bodies of good temperature, I haue found those Wounds heere tofore to bee as little rebellious in their curations, and as easie to handle as those which are made by anie Instrument of that kinde; I meane such which make a round and confused wound, or of such a figure which the shot maketh: and therefore it is most necessary that there bee a greater regard had to the

From whence proceedeth the malignity of woundes made by Gunshot.

The signes of Wounds

the symptomes or accidents of the contusion, dilaceration, fracture of the bones, and euill quality of the incompassing aire, then to the combustion which is thought to proceed from the Bullet, or venenosity of the powder, because of the reasons aforesaide. This I thought good to publish to the world to ayde yong and new Practitioners in Chirurgery, in the same manner & Method which I haue my selfe experimented in following the warres, hauing therein continued for the space of forty yeares. Wherein I protest I haue followed the counsel of Physitians and people of my profession, such as were most renowned and approoued both by their doctrine and long experience: concerning whom I doe assure my selfe, that they do know more then my writings can containe. And therefore I write not for them, but for the yong Prentises in this Art, & for such as want better meanes to helpe them in vrgent cases proceeding from these saide wounds, whome neuerthelesse I aduise to take the counsell of the Chirurgian, if his owne reason and experience do not guide him in his operations.

Intention
of the Author.

CHAP. II.

Of the signes of wounds made by Gunshot.

IN the beginning of the Curation, you ought first to know whether the wounds was made by Gun-shot or no; which is easie to be seene if the figure of the wound be round and luid in colour,
and

Wounds made by Gunshot.

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and the naturall colour of the part is chaunged, that is to say, yellow, azure, liuid, or blacke. Also at the same instant that the patient receyued the blow, if he say that he felt an agrauating pain, as if he had beene strooke with a great stone, or with a club, or as if a great burthen had falne vpon the wounded part. In like manner, if the wound hapned not vppon any great vessell, if there haue issued but little blood from the wounded partes, which happeneth because they are contused, and greatly crushed, and therefore they tumisfe presently after the blowe receyued; insomuch, that sometimes the passage is so stopt, that there can hardly be conueyed in either rent or Seron; and thereby it cometh to passe, that the flux of blood is suppressed, which otherwise would flow at their Orifices. Also the Patient therein feeleth a great heate, which hapneth because of the impetuositie proceeding both from the violent motion of the Bullet, and the vehemēt impulsion of the ayre, with the ruption of the flesh and neruous partes. Sometimes also because of the fractured Bones, which depresse and pricke the sayde parts; from whence ensueth fluxion and inflammation. Also because of the great contusion which the Bullet maketh; which by no meanes can enter into anie part of our body but by great force, by reason of the round figure thereof, whereby the place becommeth blacke, and the neighboring partes liuid: and from thence there followeth many great accidents; as Paine, Fluxion, Inflammation, A-

Shon

H

po

The Method of curing

postume, Spasme, Faintings, Palsie, Gangrena, Mortification, and finally death. They oftentimes send forth a Sanies virulent, & very fetide, which proceedeth from the great abundance of humors which flow to the wounded part, because of the vehement crushing, contusion, and dilaceration of the parts, and for want of natural heat to comfort and governe them. Also by reason of the Cachochimy of the body, and the neruous partes, as the ioynts: also such wounds are founde for the most part greater then such which are made by the punction of a Buckes horne, or the Wound made by a stone or any other such like Contusions, because that the thing it selfe was round, and doth therfore require a greater and more violent impetuosity to make it penetrate into the inward parts of the body, wherein it seemeth to equalize the blowes of thunder.

CHAP. III.

The manner how to handle the aforesaide woundes at the first dressing.

First, it is conuenient that the Chirurgian should amplifie the wound (if the part offended doe permit the same) for these causes: that is, both to giue free issue vnto the Sanies, as also to giue ample passage vnto all such straunge bodyes which might haue bene conueyed in with the shot, and to draw them forth (if any there be) as any portion of the apparrell, wad, paper, peeces of Harneisse,

Wounds made by Gunshot.

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ness, Maile, Bullets, Shot, Splinters of bones, dilacerated flesh, and other things that shall bee found therein; and this to bee done at the first dressing if it be possible. For the accidents of pain and sensibility are not so great in the beginning, as they are afterwards.

Now for the better extraction of the aforesaid things, you ought to place the Patient in the same situation that he was at the time when he was first shot, because that the Muscles and other parts being otherwaies situate, may stop and hinder the way; and for the better finding of the saide Bullets, and other things, it is fitting that search bee made with the finger (if it be possible) rather then with any Instrument, because that the sense of feeling is more certaine then any Probe, or other insensible thing. But if the bullet haue pierced farre into the body, there it may be reached with a Probe, round in the end thereof, for feare of causing paine: neuerthelesse it hapneth sometimes that the Bullet cannot be found by the Probe, as it hapned in the campe of *Parpignan*, to my Lord the Marshall of *Brissac*, who was wounded with a Musket shot neere to the right *Omo-plase* or shoulder-blade, where many Chirurgians because they could not finde the saide Bullet, affirmed that it was entered into the capacity of the body, but I not hauing that opinion, came to seeke for the Bullet, where first without vsing any Probe, I caused him to be placed in the same gesture of bodie as he was at that time when he was Wounded:

The situation of the Patient to extract vnsensurable things.

H 2

then

The Method of curing

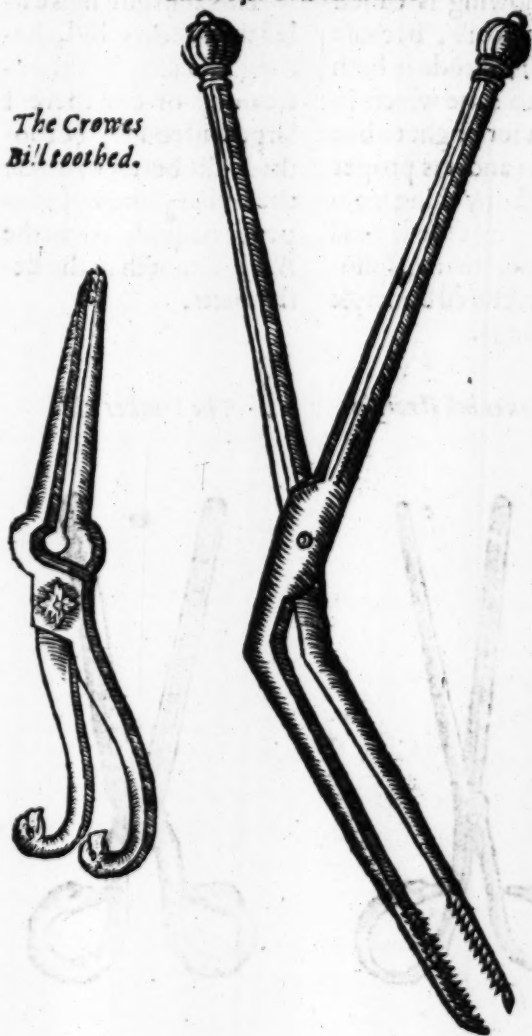
then I began with my fingers gently to compresse about the neighbouring parts of the wound; in doing whereof, I found a tumor and hardnesse in the flesh, with the sense of paine, and lividitie of colour in the place where the Bullet was, which was betwixt the lower part of the *Omoplate*, and the seventh and eight *Vertebre* or turning ioynt of the backe. In which place, incision was made to draw forth the shot, whereby he was shortly after cured. Wherefore it is very convenient to search for the Bullet not onely with the Probe, but (as I saide before) with the fingers, by handling and feeling the part and places about the same where you may coniecture the Bullet to haue penetrated

Chap. 4. A Description of such Instruments which are proper to extract Bullets, and other strange Bodies.

AS for the strange bodies which may be infix-
ed in the wound, they may bee extracted by
such Instruments heereafter described, which are
different both in figure and greatnesse according
as neede shall require; whereof some are toothed,
& others not. And it is fit the Chirurgicalian should
haue of many and diuers fashions: some greater,
and some smaller of euery kind to accomodate
them to the bodies and wounds, and not the bo-
dies and wounds to his Instruments.

*A Cranes Bill brought into the forme of an Elbow,
Cubite, or bowed arme.*

*The Crows
Bill toothed.*



This following is called the *Cranes bill*, because of the similitude it hath thereunto; the which in like manner ought to bee toothed; and it is proper to extract any thing from the bottom of the wound both shot, maile, splinters of fractured bones, & other things.

This Instrument is called the *Duckes Bill*, having a Cavity in the extremity or end thereof large and round, & toothed, the better to holde the Bullet; and it is proper principally when the Bullet hapneth in the fleshy parts.

The Cranes bill straight.

The Duckes Bill.

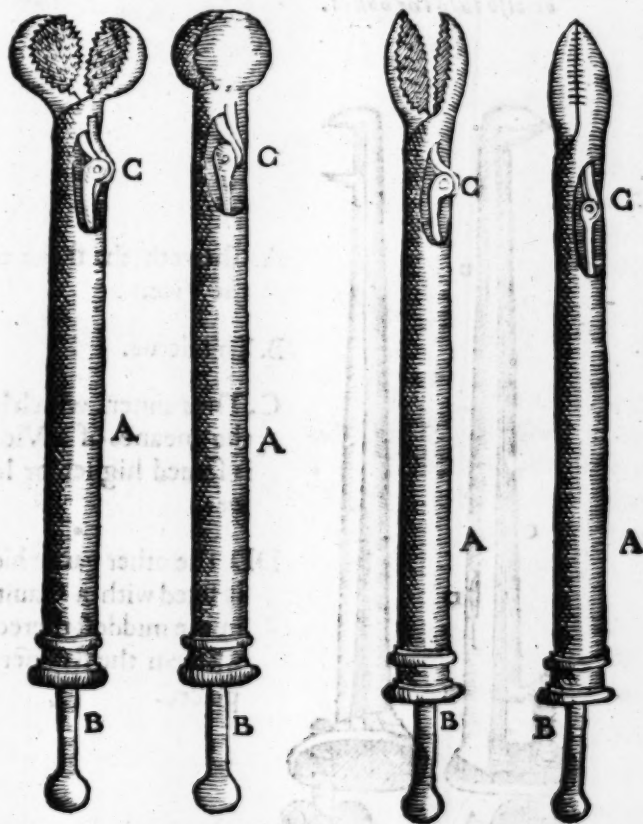


Another

Wounds made by Gun-shot.
 Another Fashion of
 draw-Bullet.

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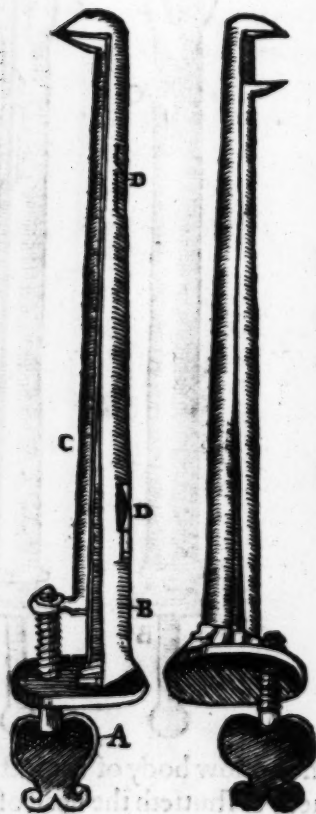
Another fashion of Draw Bullet, called
 the Lizards head to draw the Bullet,
 marked with the same Letters as the
 former.



- A. sheweth the Pipe, or the hollow body of the instrument
 B. The Rod, which openeth & shutteth the head of the In-
 strument.
 C. The ioynt.

The Method of curing

Another Instrument called the Parrats Bill, and it is proper to draw forth any peeces of Harnesse which may be inserted into the bottom of the Member, or also into the bones.

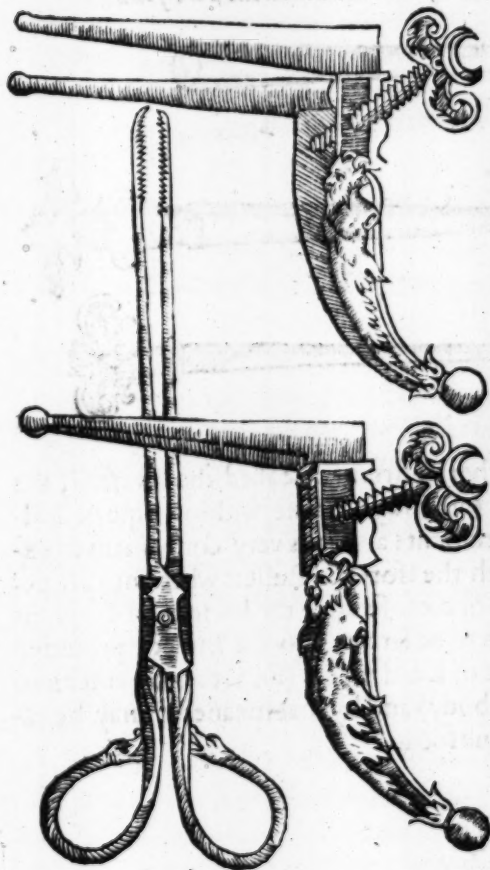


A. sheweth the stalke of the Vice.

B. The Scrue.

C. The runner, which by the meanes of a Vice, is scrued higher or lower.

DD The other part which is fixed with a Cautie in the middest thereof, wherein the Runner is placed.



Another Instru-
ment which is call-
ed the Swans bill,
which openeth wi h
a Vice, accompany-
ed with a payre of
Forceps, which
beere before wee
have called the
Cranes bill, and is
serveth to drawe
foorth any strange
body, after that the
wound is dilated
with the saide
Swans Bill.

If the strange bodyes, especially the Bullet or shot, be not ve-
ry deepe, they may be drawne forth by Eleuatories.

*The Method of curing
An Instrument called the Tire-fond.*

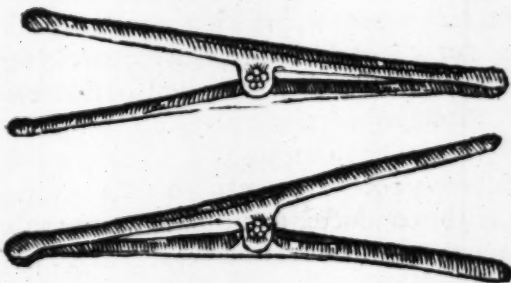


Another Instrument called the *Tirefond*, the which is turned by a *Scrue* within a pipe or hollow Instrument; and it is very convenient to extract forth the aforesaid Bullets when they are penetrated or are infixed in the bones; for the point thereof is to be served into the Bullet, provided that it be of Lead or Tin (for it cannot enter into a harder body) and by that meanes it may be easily drawne forth.

Wounds made by Gunshot.

A Dilatorie.

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This Instrument is named a Dilatory, which may be vsed to open and dilate the wounds, to the end that the strange bodies may the easier bee found and extracted, for by compressing together the two ends thereof, the other two do open, it may also serue in many places, as the nostrils, fundamente; and other parts.

The Instruments which follow are Needles for the Seton, and are very conuenient when as you would passe in a Seton to keepe the wound & the way of the Bullet open, vntill you haue drawne forth all the strange bodies which might yet remaine therein; besides, they may serue to explore or search into deepe wounds to find the Bullet; not causing any paine, because they are round and polished towards their extremities.

You must vnderstand that those Probes which are vsed to serch the bullet ought to be of a mean greatnesse, polished and round on their extremities, because that the edges of the wound, and

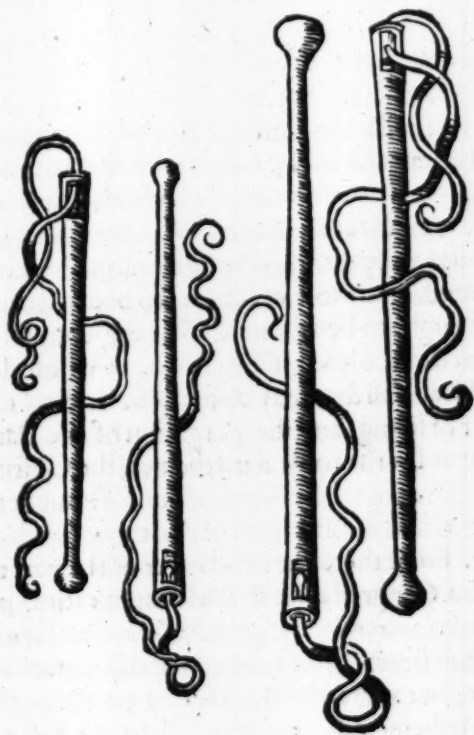
Of what
bignes the
Probes
ought to be,

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the way whereby the Bullet hath passed, doeth incontinently ioyne together, and touch the one side against the other. In such maner that the sayd wound or way of the Bullet, will appeare in sight to be much smaller then it is: and for that cause those Probes which are slender and sharp, are nothing so commodious; for they will stop and stay on euery part of the reioyned wound, and cannot so easily be conducted to the place where the bullet is, as those which are somewhat greater. Also those which are small and slender, doe pricke and offend the flesh of the wound whereby the Patient is much mollested, and is oftentimes a cause that the Bullet cannot be found. Also you ought in like manner to haue those which are greater & longer to passe through the thigh when necessity shall require. Which length of them ought to be changed and diuersified according to the greatnesse of the wounded member. For I am of this opinion, that one should not strue too much to make them passe alwayes thorough the wounded parts for feare of induring paine and other accidents. For the Patient may be cured as well although the Seton be not passed thorough, as by experience it hath beene seene, that a Bullet hath bene shot through the body, and yet without the passing through of a Seton, they haue neuertheless bene cured.

Probes

Probes which may serve for Setons.



CHAP. V.

The manner how to handle those woundes at the first dressing, after that the strange bodies are extracted.

The principall intention of the Chirurgian.

AFTER you haue drawne forth the strange Bodies by the aforefaide meanes, the principall intention shall be to combate against the contusion and alteration of the aire, if it be hot & moist, and disposed to putrifaction; which shall be done both by remedies taken inwardly, as by others applied outwardly; and also put or infused within the wound. For those which are to bee taken inwardly ought to be administred by the counsel & ordinance of the learned Physitian, to whose doctrine I leaue all that may appertaine both to the manner of liuing, and the purgation of the Patient. But as for the topical medicines, the Chirurgian (according to the things afore said) ought to consider of the constitution of the times, and of the aire. For if there bee no danger of the part to fall into a Gangrena, he shall vse suppuratiues, as in contused wounds, which are *Oleum Castellorum* or of a digestiue, hauing a regard to the nature of the part, because that the nervous parts doe require Medicines more drying, then the fleshye parts do. For in the ioynts and nervous parts, you may vse of the Terebinth of Venice, or the Oyle of waxe, of Masticke, the yolkes of Egges, adding thereto a little Aqua-vitæ rectified. Such like

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like things haue power to disiccate and consume the watrish humidity which issueth from the neruous parts, and also easeth the paine. *Iohnbertus* Physitian in ordinary to the King, and Chancelour of the vniuersity of *Montpellier*, who hath most learnedly written of the Woundes made by Gunshot, because he hath seene many wounded when he followed the wars, in the Treatise which he hath made, he saith; that in the simple wounds made by shot, there ought not to be vsed any Medicine Escharoticke, or that causeth an escharre, either actuall or potentiall, because they doe endure paine, Inflammation, Gangrena, Feauer, & other pernicious accidents. Also because that the Eschar or crust hincere the suppuration which ought presently to bee indured, to separate the contused flesh, together with the Sanies, lest that all should degenerate into putrifaction, as easilie it may when the superfluous humour putrifieth long in one place, not hauing free passage; not so much as for the exhalatiō of the putrified vapors, because that they are enclosed and couered in with the eschar: which being inclosed doe multiply, insomuch that they do require a greater place then is permitted them; then they passe and enter from the small vessels into the greater; and from thence into the noble parts, from whence most commonly ensueth death: neuerthelesse, if there bee any suspition of putrifaction, then in such a case you ought to passe from suppuratiues, vnto remedies that do resist putrifaction, leaving the pro-

Why no escharoticke Medicine ought to be vsed.

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proper care to come vnto the accidents. Wherefore at the first dressing in the case aforesaide, in the wound may bee vsed this following vnguent.

Description
of our Egyp-
tium pro-
per for the
aforesaide
wounds

℞. puluer. alumin. rochæ, viridis æris, vitrioli romani, mellis rosat. an. ʒ ij. aceti boni quantum sufficit, bulliant omnia simul secundum artem, & fiat medicamentum ad formam mellis. The Vertues of this vnguent is, that because of the heat & tenuity thereof, it inciseth and attenuateth the humors, reuoketh the naturall heate which was repelled by the vehement impulsion of the blow, & the violent agitation of the aire conducted by the Bullet. Moreouer it correcteth the putrification of the virulent humor, which presently cleaueth vnto, and so disposeth the contused flesh in such manner, that it maketh an escharre. This vnguent when and as often as it shall be needfull may bee applyed with Tents or Setons, beeing first dissolved with a little wine or Aqua-vitæ: The which tents ought to be both great and long for the first dressing, thereby to enlarge and dilate the wound that the Medicines may therby the better be conveyed in. But afterwards they ought not to be applyed so long or great. Also that the Medicine may the better be conueyed into the bottome of the wounds, it may bee incited in with a Syringe. Moreouer the vertue and strength thereof shalbe diminished according to the temperature of the body, and sensibility of the hurt. As if the wound be in the neruous parts, it shall be mixed with the Oyles of Terebinth, or of *Hypericon*, in such quantitie

tity as the expert Chirurgicalian shall know to bee needfull. But the Egyptiacum is not to bee vsed at all, vnlesse it bee in such times which are Pestilentiall and dangerous for those saide wounds, & that they do decline to putrifaction. After the vse of Egyptiacum you may separate & make the escharre fall, with remollitiue and lenitiue things, as the following Oyle in vsing thereof a litle hotter then luke-warme.

℞. Olei violati ℥ iij. in quibus coquantur catelli duo nuper nati, vsque ad dissolutionem ossium, addendo vermium terrestrium præparatorum ℥ j. coquantur simul lento igne, deinde fiat expressio ad vsum, addendo Terebinthinæ Venetæ ℥ iij. aquæ vitæ ℥ j. The said Oyle is of great & meruellous efficacy, both to appease the paine, as also to suppurate the wound, and to make the escharre fall. But for want thereof this which followeth may be applied which is easier to be had.

℞. Olei semini lini, & liliorum an. ℥ iij. vnguent. basilic. ℥ j. liquefiant simul, & fiat medicamentū, de quo vulnere indatur quantum sufficit. I haue knowne that the saide Oyles being applied in the beginning of the hurt reasonable warme to appease the paine, to lubrifie, relaxe, and moysten the edges of the wound, disposing it to suppuration, which is the true way to cure those woundes, as *Galen* himselfe reciteth from *Hippocrates*, saying; That if the flesh bee contused, crushed, or battered with any Dart, or in any other manner, that it ought so to be handled that it bee brought

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to suppuration as soone as may bee: For by this meanes the wound shall bee the lesse mollested with Phlegmon (or inflammation.) Also it is necessary that the contused flesh be putrified, liquefied, and conuerted into *pus*, that new flesh may afterwards be regenerated.

Ioubertus doth very much approue this remedy, which I neuer yet did experiment, and it this. Take of the powder of Mercury twice calcined ℥ j fresh Hogs greace, or sweete Butter, ℥ viij . Camphire dissolued in Aqua vitæ, ℥ ij . mixe them together, adding thereto a little of the oyle of Lillies or Linseed. Experience doeth shew that this remedy is excellent, and reason doth also confirm it. For the powder of Mercury accompanied with vnctious and moistning things, causeth the contused flesh to suppurate easily, & in short time without induring any great paine. As for the Camphire, whether it bee hot or cold, it serueth greatly because of the excellent tenuitie of the parts thereof. By reason wherof, euery Medicine of what quality soeuer it be, doth penetrate, and disperse the Vertues thereof the better. Moreover, the saide Camphire doth resist all putrification. Some do instill into the wound Aqua vitæ, in the which they dissolue calcined Vitrioll; which medicine is not suppuratiue, but it resisteth putrification; of the which you may vse in times & seasons that are hot and moyst. Another ℥ iij . Olei Terebinth. ℥ iij . Aqua vitæ. ℥ ss miscæ.

The vertue
of Campher

Now, if the wound were giuen neere at hand,
then

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then of a certaine the wound may bee with burning, by reason of the flaming powder, and shall be applyed medicines proper vnto the combustion thereof, neuerthelesse not leauing the contusion: and as for the parts about the wound, there you shall not apply Medicines which are refrigera-
tiue and astringent, but remollitiues and suppuratiues, for they canot be vsed at the first dressing, because they do coole and weaken the part, and hinder suppuration. Also they do constipate the skin, which is a hinderance to the transpiration of the fuliginous vapors: from whence ensueth Gangrena and mortification, thorough the vnfit application of such like medicines. VWhere the contusion shall bee great, there you may make many scarifications, therby to discharge the part of the bruised bones which is subiect to putrifie: but in the neighbouring parts, and about the contusion farre off from the wound, you ought to apply cooling & corroborating medicines to prohibite and hinder the defluxion of Humours, as is this.

℞. Puluer. boli armenis sanguin. Dracon. puluer. myrrh. an. ʒ j. succi solan. semperuiui, Portulac. an. ʒ j. ꝑ album ouorum iij. oxyrrh. quantum sufficit, fiat linimen. vt decet. Or other such like: whereof it is conuenient you should vse, vntill you are assured of the perfect preuention of the accidents. In like manner, great care ought to be taken in the apt cooling of the member, situating it in a figure proper, and without pain if it be pos-

Combustion
on ioynd
to woundes
made by
Gunshot.

Time to ob-
serue to
dresse the
patient.

sible at the beginning, vntill that the wounde be-
ginneth to suppurate, you neede not dresse the
patient but from 24. houres to 24. houres: and
when the suppuration beginneth, and by conse-
quence the paine, feauer, and disquietnesse shall
augment, the Patient ought then to be dressed e-
uery twelue houres. But when there shal be great
quantity of matter which doth molest the patient
then it is needfull that he be drest euery 8. houres:
& when the *pus* beginneth naturally to diminish,
the once euery twelue houres shall suffice. Final-
ly, when the Vicer beginneth to be filld with flesh
and sendeth not forth much matter, then to bee
dressed once a day shall be sufficient, as in the be-
ginning.

CHAP. VI.

*How the saide wounds ought to be handled
after the first dressing.*

AT the second dressing, and in the rest follow-
ing, if there be no danger of putrifaction and
Gangrena, you may vse one of the aforesaid oiles
adding thereunto of the Egges, with a little Saf-
fron, which shall bee continued vntill the excre-
ment of the wound bee digested and brought to
suppuration. Heerein it is to be noted, that in
wounds made by Gunne-shot, it is longer before
they bee brought to suppuration then other
wounds made by other instruments, because that
the bullet and the aire which it thrusteth before
it,

*Pus is not so
made by
Gunshot, as
in all other
wounds.*

Wounds made by Gun-shot.

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it, dissipateth (by reason of the great Contusion thereof) the naturall heate, and the spirites from the part, which causeth that the concoction is neither so soone, nor so well made, for want of naturall heate, from whence there followeth an exceeding foetide or stinking saour of the *Sanies* and other accidents very dangerous. Neuertheless it is for the most part made in three or foure dayes, sometimes also sooner or later according to the temperature of the body, and of the part, & the quality of the aire hot or cold. These things done, it shall be needfull to begin to mundify by little and little the wound, by adding to the aforesaide Medicine, of Terebinth washed in Rose water or Barly water, or such like, thereby to take away the heate and mordacity thereof. If the disposition of the time be very cold, then you may adde vnto it of *Aquavitæ*, according to the counsell of *Galen*, who teacheth that in winter ought to be applied hotter medicines then in sommer. Afterwards you may vse of this Mundificatiue,

℞. *Aquæ decoct. hordei quantum sufficit*, *succi plantaginis*, *Appij*, *Agrimoniæ*, *Centauri minoris*, an. ʒ j. bulliant omnia simul, in fine decoctionis adde Terebinth. venet. ʒ iij. mellis Rosati. ʒ ij. far. hord. ʒ iij. *Croci* ʒ j. misceantur omnia simul bene agitando fiat mundificatum mediocris consistentiæ.

Another.

℞. *Succi clymeni*, *plantag. absinth.*, *appij*, an. ʒ. ij. Terebinth. venet. ʒ iij. *syrup. absinth.* & mellis Ros. an. ʒ ij. bulliant omnia secundum artem, po-

K 3

stea

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stea colentur, in colatura adde puluer. Aloes, Mastich, ieros, florent. far. hord. an ʒj fiat mundificat. ad vsum dictum.

Or this;

℞. Terebinth. vener. lotæ in Aqua Ros. ʒ v. olei Ros. ʒ j. mellis ros. ʒ iij. myrrh, aloes, mastich, aristoloch. rotundæ, an ʒj ʒ far. hord. ʒ iij misce, fiat mundificatiuum. The which shall bee applyed in the wound with Tents and setons, neyther too long, nor too great; because that then they may hinder the euacuation of the Sanies or matter, & of the vapors eleuated from the wounds; which if they should be retained, it is most certaine that they will heat the part, and acquire to themselues an acrimony, which afterwards will eate into the edges and other parts of the wound; from whence insueth dolour, fluxion, inflammation, fluxe of blood, Apostume, and putrification, which are easily communicated to the noble parts, and cause afterwards many pernicious accidents. And therefore the Chirurgicalian need not to feare any thing at all, of the closing or conglutinating of the aforesaide wounds, because that the flesh being so greatly contused and dilacerated, cannot consolidate vntill the contusion be first suppurated and mundified. And therefore I aduise him not to vse any Tents or Setons but those that are very small and slender, to the end that they may not hinder the issue of the matter contained, and that the patient may indure them easily, thereby to auoyde the aforesaid accidents. The vse of Tents and Setons is to carry the medicine vnto the bottom of the

Aduertisement to the young Chirurgicalian.

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the wounds, and to keepe them open, especially in their Orifices, vntill that the strange and vnnatural things be expelled: but if the wound bee sinuous and deep in such maner that the medicines cannot be conueyed vnto all the offended parts, then you may make iniection with the decoction following.

℞. Aquæ hordei ℥ iiij. agrimon. centauris, minoris, Pimpinellæ, Absinth. Plantag. an. m℥. Rad. Aristoloch. rotun. 3 ℥. fiat decoctio ad ℥ j. in colatura expressa dissolue aloes hepaticæ 3 iij. mellis rosat. 3 ij. bulliant modicum. With this there shall be iniection made three or four times together, every time that the patient is dressed. And if this remedy be not sufficient to cleanse the matter, and to consume the spongy and putrified flesh, you may then mixe with the said decoction of Egyptiacum, dissolved in such a quantity as necessity shall require; as for a pound of the sayd decoction, an ounce of the said vnguent more or lesse, the which is of most great efficacy to correct the spongyous flesh from the bottome of the said wounds: the like also doth the saide Egyptiacum, being applyed aboue on the excrecence of the spongyous flesh. I haue in like manner experimented the powder of Mercury and Alom burned, mixed together in equall portions, to haue in that case the like vertue vnto sublimate or Arsnick (but in working it is nothing so painfull) and it maketh also a very great eschar, whereat sometimes I haue much wondred. Some practitioners

A Catharicke powder.

do.

The Method of curing

doe vse oftentimes to leaue a great quantitie of their iniections in the bottome of such sinewous wounds, the which I approoue not. For besides the putrification and corruption which thereby it getteth, it holdeth the parts extended, and doeth humid or moysten them: where by it commeth to passe, that Nature cannot do her duty to regenerate the flesh, considering that for the curation of all Vlcers, (that being an Vlcer, as saith *Hippocrates*) the scope or intention ought to be to dissipate them, and not moisten them.

Many doe erre also in the too frequent vse of Setons, in this; That not applying themselves to reason, they do vse to renew them alwaies, whereby they rub and fret away the tender flesh on the edges of the wound; the which rubbing and chafing doth not onely cause paine, but also bringeth with it many euill accidents. And therefore I doe very much commend the vse of the hollow tent, which are made either of Golde, Siluer, or Lead, such as are described in the wounds of Thorax: I meane to be vsed in such places which haue lapasity sufficient, and where there shalbe great quantity of *Sanies*.

Compresses
or Boulsters.

Also it is most needfull that there should bee applied Compresses or Boulsters iust vpon the bottome of the sinus, thereby to comprimate those parts which are distant from the Orifice, & to expell the Sanies. To which end, it is fitting that the boulster be perforated iust vpon the orifice of the sinuous vlcer, and vpon the hollow tents; & that ther-

therein there bee placed a sponge to receiue the Sanies : for by this meanes the expulsion, euacuation, and absorption thereof, shall be much better. In rolling, the Ligature ought to bee first begun on the bottom of the sinus, with a mean combustion, to the end that the matter bee not retrayned within the Cavity thereof. The Rollers and Boulsters proper to this operation, shall bee first moistned in Oxycrat, or soure Wine, or in any other astringent liquor, to roborate and strengthen the part, and to hinder the defluxion. But great heed ought to be taken, that ther be not too great an attrition made vppon the part, because that thorough the astriction or straight binding, extreame paine may be produced by meanes of the exhalation of the fuliginous excrements which therby are prohibited. Also it may cause the member to become Atrophied or withered thorough the too long continuation of the said Rollers.

CHAP. VII.

*Of the meanes to draw forth such strange bodies,
which shall yet remaine to be extracted.*

AND where there shall remaine any splinters of bones, which at the beginning were not extracted by the aforesaid Instruments : then you ought to apply this medicine, which is of great power to draw them forth, and all other strange bodies.

R. Radicis, ieros, florent. panac. & Cappar.
L an.

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an. 3 iij. aristolochiæ, rotundæ, mannæ, thuris,
an. 3 i. in pollinem redacta concorporentur mell.
rosar. & terebinth. venetæ. ana 3 ij.

Another remedy to take away the saide Splinters, and corrupted bones.

R. Resina pini, siccæ, 3 iij, Pumicis combusti
& extincti in vin. albo, radic. ireos, aristolochiæ,
ana 3 β. thuris 3 j. squamæ æris βij. in pollinem
redigenter diligenter, incorporentur cum melle
rosato, & fiat medicamentum.

Besides these remedies which haue in them, & from their nature, such power to attract soorth strange bodies, there are of others which haue the like effect and vertue by putrification, *Vt omnia stercora Animalium*. Also Leauen and such like, as *Galen* writeth.

CHAP. VIII.

Of the Indications which ought to bee obserued in the saide wounds.

THE mundification and the extraction of the saide strange bodies being done, it followeth then to aide Nature; both to regenerate flesh, & also to cicatrice it, as wel by things taken inwardly, as by outward Medicines hereunto conuenient, and to proceede therein by certaine Indications, which are taken first from the essence of the disease, and from the cause thereof. If it bee present although that from the primitive cause (according to *Galen* in the third of his Method) here ought

ought no Indication to bee taken, no more then from the time wherein hee meaneth from the absent cause; and from the time past. In like manner Indication ought to be taken from the foure vniuersall times of the cureable disease, that is to say, from the beginning, increasing, state, and declination: according to the which times, the remedies ought to be diuersified. Another Indication is take from the temperature of the Patient, which also changeth the curation. For euery rationall and Methodicke Chirurgical knoweth well, that other remedies are required in a Chollericke body, then in a Flegmatick; and so of the other temperatures both simple and compound. Vnder the which Indication of the temperature, shall bee comprehended that of the Age, which receyueth not all remedies alike, but demaundeth some for the yong persons, and others for the old.

Indication
taken from
the temperature
of
the body.

Moreover, Indication is to bee taken from the custome or manner of liuing of the Patient; as whether hee hath beene accustomed to eate and drink much, and at all houres: for then you ought not to ordaine him such an exquisite dyet as vnto him that is accustomed to eate and drinke but little, and at certaine houres: and therefore the diet of *Panades* are not so proper vnto vs as vnto the Italians, because our bodies require more lenitiue things: which effect it woorketh with them, because of Custome, which is a second Nature. Vnder this accustomed manner of liuing, ought to be vnderstood the condition of the life, and the

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exercise of the Patient, forasmuch as you ought to vse stronger remedies vnto the robusticke & men of labour, such as haue their flesh hard, then you ought to vse vpon the delicate, and such which labour but little, and exercise lesse. Some there bee that had rather comprehend this Indication vnder that of the temperature. For my part I wil not dispute of it, but will leaue the resolution thereof wholly to the Doctors.

The Indication taken from the vertue of the patient.

The Indication taken from the vertue of the patient, is aboue all other things to be respected, because that it failing or being very weake, all other things ought necessarily to bee best to come vnto it. As when we are inforced through necessity to take off a member, or to make any great incisions, or such like things, if the patient haue not vertue sufficient to indure the paine, it is necessary to deferre such operations (if it possible) vntill that Nature be restored, and hath recouered her vertues both by good nourishment and rest.

Sentence of Guido.

Another Indication may bee taken from the Ayre which doth encompasse vs: vnder the which are comprehended the seasons of the yeere, the region, the place of our abiding, and the constitution of the time. For according to the heat, coldness, driness, and moysture of the aire, also according to the continuation of these qualities, the Medicines ought to be prepared. And therefore (as sayth *Guido*) the wounds in the head are more difficult to heale at *Paris* then at *Auignon*; and the wounds in the legges are more tedious at *Auignon*.

non

Wounds made by Gun-shot.

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non then in *Paris*; by reason that in *Paris* the ayre is more cold and moyst then at *Auignon*, which is a contrary thing, especially to all woundes in the head. Contrarywise, in *Auignon*, the heate of the incompassing aire doeth melt and subtile the humors; whereby such humours more easily and in greater abundance do fall downe into the legs: from whence it commeth that the wounds in the legges are more difficult to cure at *Auignon* then at *Paris*. But if any one doe alledge experience to the contrary, that the woundes in the head, do more often become lethall or mortal in hotte Regions then in colde. To him I answer, that that proceedeth not by reason of the aire, inasmuch as it is hot and dry, but because of some superfluous humidity or euill vapour communicated with the aire; as in those partes of *Prouence* and *Italy*, which are neere to the Mediterranean sea.

The Indication of curation may also bee taken from the temperature of the wounded partes: for the fleshy parts doe require other remedies then the Bones or the Nervous partes, and so others. The like ought to bee obserued concerning the sensibility of the saide parts, which in like manner altereth the manner of curation: for it is not fitting to apply such sharpe and violent medicines to the Nerves and Tendons, as to the Ligaments and other insensible parts. The dignity and action of the wounded parts hath no lesse priuiledge in the act of curation then the former. For, if the wound be in the Braine, or in any other of the vi-

Indication
taken from
the wound
ed part.

of all or naturall parts, it behooueth that their Medicines diuerſified and applied according to their dignity and action, becauſe that from the conſideration of theſe wounds, is oftentimes gathered a certain iudgement of the inſuing accidents. For ſuch woundes which doe penetrate into the ventricle of the Braine, the Heart, or in the great veſſels, in the Cheſt, in the Neruous part of *Diaphragma*, in the Liuer, in the ſtomack, in the ſmal guts, and in the bladder, if the wound bee great, they are neceſſarily mortall. Alſo ſuch which are in the ioynts, or neere thereunto, and in bodies Cacoehymed or of an ill habitude are oftentimes mortall, as hath beene ſayde heere before. In like manner, the Indications which are taken from the poſition and colligance of the affected part ought not to bee forgotten, neither the figure thereof, as *Galen* hath ſufficiently explained in the 7. of his Method, and in the ſecond to *Glaucus*.

Aphorif. 18.
Booke 19.

CHAP. IX.

How Diſeaſes become compounded.

MOREouer in taking the aforeſaid Indication, you ought to conſider whether there bee a complication of the diſeaſe, or not: For, euen as the ſimple diſeaſe propoſeth a ſimple Indication, ſo the complications of the indiſpoſitions againſt Nature, do propoſe mixed or compounded Indications. Now the aforeſaide complications are made after three manner of wayes, that is to ſay, diſeaſe

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disease with disease; as a Wound with an Apoplexie or fracture of the bones. Disease with cause, as an Ulcer with defluxion. Disease with symptome, as a wound with paine, or with a Fluxe of blood. Or all things against Nature together, as disease, cause, and symptome.

Now that you might know how to handle artificially all these complications, you must followe the Doctrine of *Galen*, in the 7. of his Method, who exhorteth vs to consider the complicated affections, as that which is the most vrgent, the cause; and that without the which the disease cannot be taken away. And these are things of great importance in the curation of all diseases; & herein the Empericke becommeth wauering and vncertaine, without counsell or resolution, not knowing with which of the affections hee ought first to begin withall for the cure. But the iudicious Physitian to the contrary is directed by those three golden words from the which depend both the order and method in all such complicated dispositions and affections. The symptomes inas-much as they are symptomes, do not giue any Indication at all, neyther do they charge or alter the order of the curation. For in taking away the disease, which is the cause of the symptome, they are remooued, because they depend thereon, as the shadow doth the body: although oftentimes we are constrained to leaue the disease in an irregular care, to come vnto the accidents of the Disease; the which if they are vrgent, doe holde the place

The Vrgent
the cause, &
the necessity

place of the cause, and not properly of the symptoms.

The vse of
Indication.

To conclude, all the sayde Indications are but to attaine to two endes, that is to say, to restore the part in its naturall temperature, and that the blood offend not neyther in quantity nor quality. That being done (as saith *Galen*) nothing will hinder neyther the regeneration of the flesh, nor the vnion of the vicer. But sometimes it is not possible to put the asoresayde Indications in execution, either because of the greatnesse of the wound, or the excesse and disobedience of the Patient; or because of some other indisposition which hath happened through the ignorance of the Chirurgicalian, or from the ill or disordered application of the Medicines. And therefore by meanes of these things, there followeth great paines, Feauers, Apostumes, Gangrenas (vulgarly and abusiuely called *Esfionemes*) Mortifications, and oftentimes death it selfe. Moreouer those that receyue wounds by Gunshot, do eyther dye, or else remaine maymed and defective all their life after.

CHAP.

CHAP. X.

*How the Chirurgical shall proceede in the handling
of the saide wounds.*

IN the beginning therefore, great regard ought to bee taken to mittigate the payne as much as may be, by repercussing the defluxion, by ordaining a dyet according to the six vnnatural things, and theyr annexed, by auoyding all hot and sharp things, and by diminishing or altogether prohibiting wine, lest it should heat, subtilize, & make the humors flow to the part. His maner of liuing, ought in the beginning to be very slender, thereby to make revulsion. For when the stomacke is not filled sufficiently, it attracteth from all partes vnto it : by meanes whereof, the externe parts hauing affinity therewith, do remaine empty. And this is the reason wherefore the patient ought to keepe a slender dyet in the first dayes of his hurt. *Venus* is altogether contrary vnto them, inasmuch as it enflameth the humors and spirits more then any other motion: and for this cause it maketh the wound to bee much enflamed and subiect to defluxion. And it wil not be amisse in the beginning if there be a fluxe of bloode, to let it moderately flow, thereby to discharge the body and the part: and where it hath not sufficiently flowed, you ought the day following to vse revulsive Phlebotomy, and to take away according to the fulnesse and vertue of the patient. You neede not feare of

Phlebotomy
my necessa-
ry in wounds
made by
Gunshot.

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Causes why
there hap-
neth not al-
wayes an He-
morrhagic.

making of auersion of the blood toward the Noble parts. For (as we haue saide) there is no venomous quality therein; neuerthelesse it is generally obserued, that such wounds at that instant doe send forth but little blood, because of the great contusion made by the Bullet and the vehemence of the agitated aire, which doth repulse and driue back the spirits into the inward parts, and into the circumiacent parts of the wound, as we haue sayd before.

This is ordinarily knowne in those who haue had a member carried away with a great shot: for at the instant of their hurts, there issueth but little blood forth of their wounds, although that there be many great Veines and Arteries broken & dilacerated. But a certaine time afterwards, as in the fourth, fift, or sixt day, and sometimes later, the blood will yssue forth in great abundance: by meanes of the retuning of the spirits, and natural heate into the affected parts. As for the purgatiue Medicines. I leaue them to the Doctors. Neuerthelesse in their absence, it is necessarie to relaxe and moue the belly of the patient at the least once a day, either by art or by Nature, which shal be done rather by Clusters then Purgations, especially in the first dayes, because that the agitation of the humors in that case is to be suspected, least they shold make a greater defluxion to the wounded part. Neuerthelesse *Galen* in the fourth booke of his Method. Cap 6. speaking of the Indications of bleeding and purging, where he saith; That bleed-

Wounds made by Gunshot.

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bleeding and purging are necessary, according to the greatnesse of the disease, although that the patient be without repletion or cacochymy, or euill constitution.

Paine ought to be appeased, according to the intention and remission thereof, which to do if it happen that there is an inflammation, you may apply thereto as a locall medicine *Vnguentum nutritum*, composed with the iuyce of Plantane, Housleeke, and Night-shade, and such like. Also the Emplaister *Diachaleiteos* described by *Galen* in his first Booke of the Composition of Medicines according to their kinds, chap. 6. dissolued vvith the oyle of Poppy, of roses, and a little Vinegar, and it is of no little efficacy for that purpose. Also *vng. de bolo*, and many others of that facultie, if they be not properly *anodins* (for all *Anodins* are hot in the first degree, or at the least agreeing in heate with our bodies, as saith *Galen* in his first Booke and 19. chap. of Simples) and the aforesaid medicines are cold, yet not so much as that thereby they should become *Naucotick*, the which are cold in the fourth degree. But to bee short, the aboue-mentioned in the aforesaid case, do appease the paine very comediously, because they are contrary vnto hot distemperatures, and doe prohibit the defluxions of humors, which oftentimes are sharpe and chollericke, which are more apte to flow then the cold, and do cause a greater pain. After the vsage of repercussiuēs, I do meruellously approue this Cataplasme.

Hot humors
are apter to
flowe then
cold.

M 2

R. Mi.

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R. Micae panis infusæ in lacte vaccino lb j. ß. bulliant parum addendo olei violacei & rosa. an. ʒ iij vitellos ouorum numer quatuor. pul. rosar. rubr. florum chamemel. & melior an. ʒ ij. far. fabar. & hord. ana ʒ j. misce, & fiat cataplasma secundum artem. Or for a Medicine sooner prepared, thou must take of the crummes of bread, and so let it be a little boyled with Oxycrat, and the Oyle of Roses.

As concerning the curation of such Apostumes which happen in these Woundes, it is expedient that their Medicines should bee diuersified according to their times. For some medicines are proper in the beginning, others in the augmentation, and others in other times; as hath beene sufficiently declared by *Galen* in his thirde Booke and ninth chapter of the faculty of Medicines. And by *Guido* in the curation of Apostumes; and by those that haue written thereof. And where Nature shall incline to suppuration, it is most needful to attend her, as sayth *Hippocrates*: for the Physician and Chirurgeon, are but the ministers and helpers of Nature, to ayde her in those things whereunto commodiously she enclineth.

Aphor. 21.
Booke 2.

CHAP.

CHAP. XI.

*Of such Bullets which haue remained in certain parts
a long time after the Curation of the wounds.*

Sometimes the Bullets of Lead haue remayned a long time within the members, as for the space of seuen or eight yeeres and more; there following neuertheless not any euill accident, nor hinderance of the consolidation of the wound: & they haue continued there so long, till they haue bene thrust forth by the expulsive vertue, descending downe by meanes of their grauity and heauinesse into the inferiour parts, in the which they will manifest themselues, and then ought to bee drawne forth by the operation of the Chirurgian. Now this continuation of them so long in the body, without any corruption or euill accident (in my opinion) doth proceede from no other thing but from the matter of the Lead, whereof the sayd Bullets were composed. For so it is, that Lead hath a certain familiarity and agreement with nature, especially of the fleshy parts: euen as we see by ordinary experience, which teacheth vs, that Lead being outwardly applyed, hath the vertue to close and cicatrise old vlcers: but if the bullet were of stone, of Iron, or of any other mettall, it is a most assured thing, that they cou'd not abide long in the body, because that the Iron Bullet would rust, and thereby corrode the part where it lyeth; from whence would ensue many pernicious accidents.

An aduersi-
tise ment.

The Method of curing

But if the bullet be in the nervous or noble parts, although it were but of Lead, it could not continue there long, without bringing with it manie great inconveniencies: therefore when it cometh to passe that it remaineth a long time in the body, it is in the fleshy parts, and in bodyes of good temperature and habitude, otherwise it cannot stay there, without inducing pain and many other accidents, as hath bene sayd.

CHAP. XII.

*Of the great Contusions and dilacerations made
by the Bullets of great shot.*

Moreouer if the Bullet of a great peece of Ordinance do strike against any member, it (for the most part) doeth either carry it away, or else breake and batter it in such a fashion, through the great vehemency thereof, that it shiuereth and breaketh the bones, not onely of those which it toucheth, but also of those that are farther off, because that the bone being hard, doth in some sort make a little resistance, by which meanes the Bullet hath the greater force against it. That this is true, wee see ordinarily that the saide Ordinance hath much more action & effect against a strong wall, then against a rampire of earth, or a Wool-sacke, and other soft things, as we haue said here before. Therefore, it is no meruaile if after such wounds made by Gun-shot, there follow dolor, inflammation, seauer, spaline, Apostume, Gangrena,

Wounds made by Gun-shot.

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grena, Mortification, and oftentimes death. For those great contusions of the Neruous parts, the breakings or vehement concussions of the bones made by the saide Bullets, do cause greuous accidents, and not the combustion and venenositie of the powder, as many doe thinke, not considering the matter of the sayd powder: the which (as I haue said) it is not venomous; for if the wounde bee made in a fleshy part, without touching the Neruous parts, it onely requireth such remedies for their curation, as all other contused woundes do, without they degenerate (as I haue saide here before) into an euill quality, through the corruption of the aire; the which cause (not many yeeres since) the woundes that were then receiued to bee much altered and corrupted, with a great putrification in the fleshy and bony partes. From the which (as I saide before) were eleuated many vapors into the Braine, the Heart, and the Liuer: from whence proceeded many euill accidents, & death to the most part.

Causes of
perillous ac-
cidents in
woundes
made by
Gunshot.

CHAP. XIII.

*Of the meanes which ought to bee observed to rectifie
the ayre, to roborate the noble parts, and to fortifie
the whole body.*

AND therefore the Chirurgicalian ought to haue a great care to administer all thinges which haue power to rectifie the aire, and to roborate and strengthen the noble parts: also to fortify the whole

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whole body, which shall be done by the ensuing things; which are to be administred both inwardly and outwardly. For the Patient shall take inwardly in the morning, three houres before hee eate any thing, of the *Tabul. Diarrhodon abatis*, or *de aror. ros. de triasant. diamoschi, de Latificans Galeni*, and other of the like vertue. Outwardly shall be vsed *Epithemes* vppon the Region of the heart and Liuer, a little more then luke-warme, applied with a peece of Scarlet, or Sponge, Felt, or a fine linnen cloth. This following may serue for a form vnto euery Chirurgicalian.

R. Aquæ rosarum ʒ iiij. Aquæ buglo. aceti boni, an. ʒ ij. Coriand. præparat. ʒ iiij. Garyophyllor, Corticum citri, an. ʒ j. santali rub. ʒ ʒ. corall, vtriusque ʒ j. camph. ʒ j. croci ʒ ʒ pul. diarrho. abatis ʒ ij. theria. & mithridat. an. ʒ ʒ. pulu. florum camomillæ, melilio ana ʒ j. misce & fiat Epithema.

Moreouer, you ought to giue the patient odoriferous and refrigerant things to smell to often, to roborate the animall faculty, as this which followeth. R. Aqua rosaceæ, aceti boni, ana ʒ iiij. garyophyl. nucis mosca. cinamoni conquatafforum, therica Galeni ana ʒ j. And therein let a Handkercher or sponge bee dipped, which the Patient shall aiwayes hold to his nose. He may vse also an aromaticke Apple or Pomander for the same intention, as is this.

R. Rosar. rubrar. violar. ana ʒ iiij. baccarum myrrhi & Iuniperi, santali rubr. ana ʒ ij ʒ. benioin ʒ ij.

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3 i. camph. 3 ij. fiat puluis. Postea R Olei Ros. & nenuph. ana 3 ʒ ʒ styracis calamitæ, 3 ij. aquæ rosarum quantum satis est, liquefiant simul cum cera alba quantum sufficit. fiat Ceratum ad comprehendendos supra dictos pulueres cum pistillo calido, & fiat pomum.

Another.

R Radic. ireos florent. maioranæ, calami aromatici, ladani, benioin, rad. cyp. garyoph. ana 3 ij. mosci g. iij. fiat puluis, et cum gummi tragachan. quantum sufficit, fiat pomum.

Another.

R Ladani puri 3 ij. benioin 3 ʒ. styrac. calam 3 vi. ireos Florentiæ 3 ʒ ʒ garyophil. 3 iij maiora, rosarum rubrarum calami aromat ana 3 ʒ. pulueris sentur omnia, et bulliant cum aqua rosarum quantum sufficit, et colentur, et colata liquefiant cum cer. alb. quantum sufficit, styracis liquidæ, 3 j. fiat ad modum Cerati, comprehendantur per pistillum, addendo moschi 3 j. fiat pomum.

In like manner you may apply of your Frontals to roborate the animall faculty, to prouoke sleepe, and to mitigate and ease the paine of the head, as this following. R aqua rosacæ 3 ij. Olei rosar. et papaueris, ana 3 j ʒ. aceti boni, trochiscorum de Camphora 3 ʒ. fiat Frontale. The way to apply it is thus. Take a linnen cloth, and folde it vp fve or six times double; that done, dip it in the aforesaid commixtion, and so apply it on the Temples a little warme, which being dry ought to bee renewed againe. Herein note, that in this case the head ought not to be bound hard, lest that thereby

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the

*The Method of curing*Hyp.lib.de
vuln.Cap.

the free pulsation of the arteries of the temples be hindred, whereby the paine of the head might be augmentrd. There are many other exteriour remedies whereby the aire might be corrected; as to make a good fire in the Chamber of the patient with the wood of Iuniper, of Bayes, vine branches Rosemary, of Floure de Luce roots: also by things sprinkled in the chamber, as water and vinegar; if the patient be rich, Damaske water heerein is very proper. Or this which followeth;

℞ Maioranæ, menthæ, radicis cyperi, calami aromatici, saluiæ, lauandule, fœniculi, thymi, stœchados, florum camo. melil. satureiæ, baccarum lauri et Iuniperi an. m. iij. pulu. garyoph. et Nucis moscatæ an. ʒ j. aquæ ros. et vitæ lb ij. vini albi boni et odoriferi lb x. bulliant omnia in balneo Mariæ ad vsu dictum. Moreouer perfumes may be made to perfume the saide Chamber, as these following. ℞ Carbonis salicis ʒ viii. labdani puri ʒ ii. thuris masculi, lini et baccarum Iuniperi ana ʒ j. xylaloes, benioin, styracis calamitæ an. ʒ ss. Nucis moscatæ, santali lutei ana ʒ iij. garyoph. styracis liquidæ ana ʒ ij. zedoariæ, calami aromatici ana ʒ i gummi tragach. aqua rosac. soluti, quod sit satis: fiant auiculæ Cyprinæ, seu suffitis, qua forma libebit. As for the putrification and corruption of the bones, wee will speake thereof hereafter more amplie.

CHAP.

CHAP. XIII.

Memorable Histories.

Oftentimes the aforefaide wounds are accompanied with many indispositions, as oedema-^{Historie.} teus tumors, fracture of the bones, and the like, as (for the yong Chirurgians sake) I will relate this historie for an example, of the hurt of the Earle of *Mansfelt*, Gouvernour of the Dutchy of *Luxembourg*, Knight of the order of the King of Spaine, who was hurt at the battell of *Moncontour*, with a Pistoll shot vpon the ioynt of his right arme or elbow, which fractured the bones; whereof there were many that were fractured in such small peeces as if they had bene broken with a Mallet, because he receiued the blow so neere at hand, and through the violence and force of the blow, there hapned vnto him many accidents; as extreme dolors, inflammation, seauer, an oedemateous Tumor; a flatous or windy tumor all the arm ouer, yea euen to the ends of the fingers, together with a preparation vnto a Gangrena. Which to preuent, and also the totall mortification therof, *M. Nicholas Lambers*, and *M. Richard Hubert*, Chirurgions in ordinary to the King, had made many and deepe scarifications. Now by the Commandement of the King, I was sent for to come vnto the aforefaide patient to dresse him: where being arriued, seeing the aforefaide accidents to be accompanied with a most fætide putrifaction, we were resolved to apply on the saide scarified

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parts, of *Ægyptiacum* fortified and dissolued in vineger and *Aqua-vitæ* and such remedies which are proper for the cure of Gangrenæes. Ouer and besides these accidents, the saide Lord had a flux of the belly, by the which he expelled of the fanie quitture which came from the Vlcers of his arme. This many will not belecue, forasmuch (as they say) that if it should descend by the belly, it followeth of necessitie that the saide matter should be mixed with the blood. Also that in passing neere vnto the heart, and through the Liuer, it would cause many accidents, yea death it selfe. Neuerthelesse I doubt not but that I haue sufficiently answered all these Obiections, how and in what manner it is done in my booke *Of the suppression of the vrine*; wherefore, if any desire to know the reason thereof, he may haue recourse to the saide Booke.

Aqua-vitæ
with a little
Treacle re-
tailed pre-
senteth the
spirites, and
comforteth
the vital fa-
cultie.

In like manner, the said Lord fel ofentimes into a Syncope, by reason of the putrified vapours which ascended vp from the vlcers, which vapors by the Nerues, Veines, and Arteries, were communicated to the stomack, and other noble parts. For which cause I gaue him sometimes a spoonefull of *Aqua vitæ* to drinke, wherein I dissolued a little Treacle. Mounseur *Bellanger*, Physitian in ordinary to the King, and Mounseur *le Bon* Physitian to my Lord the Cardinall of *Guise*, men of vnderstanding, and expert in Physicke and Chirurgerie, employed all their skill (as much as was possible) to resist his Feauer, and other accidents which

which hapned to him. As for the Oedemateous and flatulent tumor which wholly occupied al the arme, I applied thereon staples wet in Oxycrat, with salt, and a little Aqua-vitæ, and other remedies, which shortly shall bee shewed. Then with double clothes I sewed them vp as strong & handsomly as I could possible, that is to say, as much as the said Lord could indure it. This compression serueth both to containe the fractured Bones in their places, and also to expell the sanies from the vlcers, and to repel the humors towards the center of the bodie. And when the binding and rolling of his arme was omitted, the tumour did increase in such manner, that I verie much feared the natural heate of his arme would be suffocated and extinguished. Now for to make anie other manner of Ligature it was altogether impossible, because of the extreame paine that hee felt, if his arme had bene remoued neuer so little. There hapned vnto him also many Apostumes about the ioynt of his elbow, and in other partes of his arme: wherefore to giue issue to the Sanies, I made him manie incisions; all which the saide Lorde indured willingly, telling me that if two would not serue, make three, yea foure; such was the desire that he had to be out of his paine, and to be cured. Then (smiling to my selfe) I told him that he deserued to be hurt, and not these tender and delicate persons, who wil rather suffer themselves to rot, yea to indure the paines of death, then to indure anie necessary incision to be made

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for the restoring of their healths.

Now, to shorten his cure, he vsed of a Vulnarie potion, and somtimes there was incerted with a Syringe into his vlcers of *Ægyptiacum* dissolued in wine, or else in the saide Potion, or rather *Mel Rosarum* instead of the *Ægyptiacum* to mundifie them, and to correct their putrifaction; and other remedies which would be too tedious here to recite: and among others, of the powder of *Alome* combusted, to dry vp and consume the high and spongy flesh. Also for the mundification of the said vlcers, I vsed a long time nothing but dry Lint, which was as much in quantity euery dressing, as a Mans fist. And on a day, seeing that he was without paine, and that the flesh began to regenerate, I told him that now he began to bee wel: then he saide to me laughing, I know it very wel, for now I see you doe not vse the fourth part of the Lint you did before. In the time of his curation, I protest that I tooke from him more then threescore peeces of bones. Of the which, some were as great as my finger broken in a verie strange figure, yet notwithstanding the said Lord (thankes be to God) was perfectly cured: onely it remaineth that he cannot, nor neuer will, bow or stretch forth his arme.

Historic.

Mounsier de *Bassompierre*, Collonel of two hundred horse, the day of the aforesaid battaile, was hurt with such another shot, and had a great part of the aforesaid accidents: whom also I drest vntill his perfect curation, which (thankes bee to God)

God) he attained. True it is, that hee continueth impotent as the other Lord is.

After that I had cured the aforesaid Lords, the Earle of Mansfelt, and Bassompierre, I was commanded by the King to imploy all my diligence in the curation of *Charles Phillippes de Croy*, Lord of *Hauver*, Brother to my Lord the Duke of *Ascor*, nere to *Mons* in *Haynault*, who had alreadie kept his bed seauen months and more, by reason of a wound that he receiued by a Musket-shot, three fingers aboue the knee, whom I found with these accidents following; namely, extreame paynes, a continuall Feauer, cold sweatings, losse of sleep, that part situate vpon *Os Cauda*, vlcerate in compasse as much as the palme of my hand (because he had lyen so long time on his backe) hee tooke not any rest day nor night, with losse of appetite of meate, but dranke inough. Hee was somtimes surprized in his bed with the fits of the Epilepsie, & had oftentimes a desire to vomit, with a continuall shaking, insomuch that he could not bring his hand to his mouth without the helpe of another; he fel oftentimes into a Syncope or fainting of the heart, because of the putrified vapors that were communicated to the stomacke and the noble parts, by the Veines, Arteries, and Nerues: the which we eleuated from his vlcers, and from the corruption of the bones. For the Thigh-bone was fractured and shiuered both long wise and ouerthwart, with diuers splinters; whereof some were already separated, others not. Hee also had

Another history.

Meruellous accidents.

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an hollow vlcer neere vnto the groine, which ended about the middle of the thigh. Moreouer hee had other sinuous and caniculous Vlcers about the Knee. All the Muscles both of the thigh and legge were extremely tumified and imbued with a flegmaticke, cold, moyst, and flatulent humor, in such sort, that the natural heate was verie neere suffocated and extinguished. Seeing al these accidents, and the strength and vertue of the patient greatly decayed and abated, I was stroke with an exceeding sorrow, because that I was sent vnto him, and seeing little hope of recouery, for I feared greatly that he would die vnder my hands. Neuerthelesse, considering his youth, I had some final hope, for God and Nature bringeth sometimes such things to passe, which seemeth vnpossible to the Chirurgian.

God & Nature effect
meruailous
things.

I then demanded of the saide Lord, if hee had a good courage: and told him likewise, that if hee would indure the making of certaine incisions, the which for his curation were very necessary, by that meanes his paines and his other accidents would cease. He answered, that he would willingly indure whatsoeuer I thought conuenient, yea, to the amputation of his legge, if I thought it necessary. Then I was verie ioyful, and presently after I made two Orifices to giue issue to the Matter that lay about the bone, and in the substance of the Muscles, wherby there yssued forth a great quantity. Afterwards, iniection was made with wine, and a little Aqua-vitæ, wherein there was dissolved

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dissolued a good quantity of Egyptiacum, to correct the putrifaction, and to disscate the loose & spongy flesh, and to resolue and consume the ordemateous and flatulent tumor, and to ease his paines, to refocillate and fortifie the natural heat which was greatly prepared to be altogether suffocated, because the parts could not concoct nor assimilate the nourishment necessary for them, by reason of the great quantity of matter therein contained. His Chirurgian, named M. *Anthony Maucler*, an honest man, of great experience in Chirurgery, dwelling at *Mons* in *Haynault*, and my selfe, we concluded to make him fomentations, with the decoctions of Sage, Rosemarie, Time, Lauander, Camomile flowers, Melilot, and red Roses boyled in white wine: and so a lexiue made with the ashes of oake, a little portion of vinegar, and an handfull of salt. This decoction so made, hath vertue and power to subtilize, attenuate, incise, resolue and to disscate the colde, grosse, and Flegmaticke humor, and to roborate the wounded parts. The said fomentations were vsed a long time together, to the end that the resolution may thereby be made the greater. For being applyed long together, it resolued more, by liquifying of the humour which was in the profound partes: whereas otherwise it would haue but rarified the skin, or the fleshy parts of the Muscles.

And for this intention we made him many frictions with hot Kerchiefes in all manners, that is, from the higher parts downwards, and from

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Method.

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the left side to the right: also circular wise, and this a long space together. For the breefe Frictions, I meane those that are made in short time, maketh attraction, but resolue nothing at all. In like manner euery other day, there was applied all about his Thigh and legges, euen to the sole of his foot, of Bricks heated and sprinkled with vineger and white wine, with a little portion of aqua vitæ; and through this euaporation, you shoulde perceiue many Aquosities to proceed forth of the pores of the skin by sweating, whereby the tumor diminished, and the naturall heate was reuoked. Also there was applyed compresses or Boulsters on the tumified parts, dipped and infused in a leuine made of the ashes of oake; with the which, was boyled Sage, Rosemary, Lauander, Salte, Aqua vitæ and Cloues; and Ligature was made with such dexterity as the patient could well endure it: and to so good purpose, that if it had bin but one day omitted, wee might easily perceiue the tumor. Also there was applyed good big Boulsters on the bottome of the sinus of the vlcers, to depresse and expell away the Sanies. And sometimes for the better accomplishing thereof, the orifices of the vlcers were kept open with hollow Tents. Somtimes also to resolue the tumor, there was applyed a Cataplasme thereon made thus:

℞. Far.hord.fabar. orobi an. ʒvj. Mellis com. Terebinth.an. ʒij. pul.flor.Camomel. Mellioliti, rosar.rubrar.an. ʒβ. pul.radic.ireos, florent.Cyper. ri Mast.an. ʒij. oxymellis simplic, quantum suffi-

ci.

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ciat fiat cataplas. ad formam pultis satis liquidæ.

In like manner, wee made vse of the Emplaisters of *Vigo sine mercurio*, which helped greatly to ease his paines, and to resolue the saide Tumor. Neuerthelesse it was not applyed vntil the parts were first heated, by the meanes of fomentations, Frictions, and euaporations, or otherwise that Emplaster could neuer haue wrought that effect thorough the cold distemperature of the parts. Now for the Mundification of the vlcers there was applyed remedies proper thereunto, chaunging and altering them according as wee found occasion. Also the *Catagmaticke* powders to separate the bones, and to correct their putrifaction were not spared him: hee vsed also for the space of fifteene dayes of vulnary potion.

I may not here omit to speake of the Frictions which hee suffered euery Morning vniuersally ouer the whole body, which was greatly extenuated and weakned both by reason of his dolours, & other accidents (as we haue saide) and also for the want of exercise. The said Frictions did reuoke and attract the spirits and the blood, and resolued such fuliginous humors which were detained betweene the skin and the flesh. And therefore the parts were afterwarde better nourished and refreshed; so that so soone as his paines beganne to passe away, as also the Feauer, he began to sleepe well, and to haue a good appetite, and therefore we caused him to vse good Meates, and to drinke good wine and good beere; & we brake our fasts

The Emplaster of Vigo is resolutive

The benefit of vniuersal Frictions.

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together, hee and my selfe euery Morning, with good nourishing Brethes: and by this meanes he became fat and lusty, and perfectly cured. Onely it remaineth that he cannot wel bend his knee.

Now the reasons that mooued mee to recite these Histories, is onely to instruct the yong Chirurgian to the practise thereof, and not that anie glory or praise might be attributed to me: but to restore them to God, knowing that all goodnesse proceedeth from him as from an everlasting fountaine, and nothing of our selues. And therefore we ought to giue thanks vnto him for all our good workes; humbly beseeching him to continue and augment them more and more in vs, through his infinite goodnesse.

CHAP. XV.

*An Apologie touching wounds made
by Gun-shots.*

A iust occasion
of the
Author for
his Apology

Here hapned into my hands not many dayes past, a certaine Book written by a Physitian; wherein he very openly contradicteth that which I haue written heretofore, as concerning wounds made by Gunshot and their curations. I protest that if there were no other cause, or that there were no other interest heerein then the contemning of me and my Book, I would let these things alone, and passe them away vnder silence; knowing well, that all answers and replies whereby we strue to stop the Mouths of euill speakers, do of-
ten-

tentimes rather giue them a further occasion of speaking then otherwise; and that there is no better way to stay such Controuerfies, then by not answering one word. Euen as we see that the fire is extinguished when the combustible matter ceaseth, by taking away the wood. But when I did consider the euident danger that many wold fall into, if they came to follow those rules and instructions that the saide Physitian setteth downe for the cure of the saide wounds, I therefore thought it my duty to preuent this euill, and to hinder it as much as lieth in mee, in regard of my profession. The which beyond that common affection which all men owe to the publike weale, doeth binde me particularly to this, in such manner, that I could not with a good conscience become deaf and dumbe, when both my particular and generall duties, do binde and constraime me to speake. This therefore was the true cause that did sollicite me to make this Apologie, rather then any passionate or boyling desire in me, to haue my reuëge of him who hath truly assaulted me.

Now in this booke, he pretendeth to despise & contemne the application of suppuratiue Medicines, as Balsilicon, and others of that nature. Also of those that are sharpe, as Egyptiacum, and such like. For (saith he) such remedies haue beene the cause of the deathes of an infinite number of men, whereunto they haue beene applyed; yea, although that their wounds were but superficiall, and in fleshy parts. And that heerein the counsell

Basilicon liquefied into an oyle, is proper in all wounds that require supuration.

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of *Hippocrates* ought not to be followed, who saith, that all contused wounds ought to be brought to suppuration, because (sayth he) this is a new disease, and vnknowne to the Ancients, and therefore it requireth new remedies. Also that thunder and the violent effect thereof, ought not to bee compared to the reports of Artillery.

Now seeing that he strueth to contradict all that I haue written before in my booke of wounds made by Gunne-shot, Arrowes, and Dartes, I am constrained for my defence, to reapeate somewhat of that which I haue heeretofore divulged, to reprove all these points (as I hope) one after another.

First of all, that suppuratiue Medicines are not proper in such wounds, it is against reason, authority, and experience: for euery one knoweth that the Bullet being round and massiue, cannot make any entrance into our bodies, without great contusion and bruising; the which cannot bee cured without suppuration, according to the authority not onely of *Hippocrates*, but also of *Galen*, and all other Authors both Ancient and Moderne. And what doth it serue him to call such new woundes, to derogate from the saying of *Hippocrates* whom we hold to be the Father, Author, and Founder of the Lawes of sacred Medicine, which are worthy of all esteeme and praise aboue all others, because they are not subiect to change, as all others that are established by Kings and Princes, neither are they tied to the prescription of times, nor the

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the customes of Regions. Therefore if I haue herein followed the *Hippocratick* Doctrine, which is alwayes found true and stable, I perswade my self to haue done well. And therein I haue not bene in that conceit alone; for Mounſieur *Botall*, Physitian in ordinary to the King, and Mounſieur *Joubert* Physitian to the King also, and his Lecturer in ordinary in the vniuersity of *Mont-pellier*, men well experimented both in Physicke and Chirurgery, haue lately written of this matter. Commending, and commanding the application of *Basticon* & other suppuratiues in the beginning of such wounds.

These men, because they haue followed the warres, haue scene more wounded by shot, then our Physitian hath done all his life time. As for experience, there is an infinite number of other good Chirurgians, and greatly experimented, who haue and do vse of these remedies in the beginning, to bring those wounds to suppuration, if there be no Indication that doth contradict it. I know moreover that an Empericall Chirurgeon, a neighbour of his called *Doules*, hath many and sundry times done meruailous cures, by applying onely in those woundes a suppuratiue Medicine, composed of melted Bacon, the yolke of an Egge, terebinthina, with a little Saffron, and this he held for a great secret.

Doules an
Empirick.

There was also another at Thurin in the yeere 1538. (I being then in the seruice of the late Marshall of *Montse-ian*, Lieutenant Generall of the King

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King at *Piedmont*) who had the report about all the Chirurgeans in those partes, for his excellent curing of those woundes with *Oleum Catellorum*; the description whereof, I procured of him thorough my earnest intreaty. This oyle is of power to lenifie and appease the paine, and to suppurate those woundes beeing applied a little more then luke-warme, and not boyling hote, as manie will. This an infinite number of Chirurgeans haue vsed, after that I had described it in my Booke of wounds made by Gun-shot with good and happy successe. As for that which he writeth against the Vnguent Egyptiacum, certainly I beleeeue that he abideth in that opinion and heresie alone, because there hath not bin yet discovered a more singular remedie to correct and preuent the putrification which happeneth most commonly in those wounds, the which doe degenerate oftentimes into virulent, corrosiue, ambulatorie, and malignant Vlcers, casting forth a stinking Sanies, whereby the part falleth into a *Gangrena*, vnlesse it be preuented by *Egyptiacum*, and other sharpe medicines. And for this cause they haue bene very much approued by the saide *Botal* and *Joubert*, and of all good Chirurgeans; yet neuertheles our Physitian maintaineth that they are venomous, because (saith he) that being applied in woundes by Gunne shot, they haue bene the cause of the death of many persons; which is a thing so absurd and against reason, that I will leaue the resolution thereof to the Towne-Barbers, who I am sure are of

Answer to
the viti-
ing of the
gyptiacum

of skill sufficient to confute the grossenes of that imputation; or if their want of iudgement be such that they cannot, yet the consideration of euerie one of the ingredients of the sayde *Ægyptiacum* would suffice to shew, that it is so free from anie venomous quality, that it doth resist, & is directly contrary to all sorts of poisons and putrifactions which may happen in the fleshy partes, by reason of any wound or vlcer.

He saith moreouer, that the disposition of the aire cannot be the cause to infect or restore wounds more daungerous at one time then at another. Herein also he is of this opinion alone. But if hee had well read and vnderstood *Hippocrates*, he had not so lightly contemned the constitution of the seasons, and the infection proceeding from the aire not simple and Elementary (for being simple, it neuer acquireth any putrifaction) but by addition and commixtion with other corrupted vapors, as I haue written in my treatise of the Pestilence: For inasmuch as the aire that doth incompasse & inclose vs, is perpetually necessary vnto our liues; it followeth therefore, that according to the indisposition thereof, our bodies also altered in manie and sundry manners, because we do draw it continually by meanes of the Lungs and other partes, seruing vnto respiration; and also by the pores & euerie little inuisible hole throughout the bodye, and by the Arteries dispersed in the skinne. And this is done both for the generation of the spirite of life, and also to refresh and foment our naturall

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heate. For this cause, if it be immoderately hotte, cold, moist, or dry, or otherwise distempered, it altereth and changeth the temperature of our bodies vnto its owne quality. This is cleereely seene: for when it is infected by the putrified and Cadaveruous vapors produced from a great multitude of dead bodies that haue not bene buried soone enough; as of men, of horses, and other beasts. As it happeneth after any battell, or when many men haue perished by shipwracke, and haue bene cast ashore through the violence of the waues. As for example, the memory is yet fresh, of the corruption of the aire which proceeded from deade bodies at the castle of *Pene*, situate vpon the riuer of *Lot*, in which place, in the yeare 1562. in the moneth of September, whiles the first troubles happened about Religion, there was a great number of dead bodies fell into a pit of an hundred fathome deepe, or thereabouts: from whence, two moneths after, there was eleuated such a stinking and venomous vapor, which disperfed it selfe ouer all the countries of *Agenois*, and the neighbouring places within the compasse of thirty miles round, that thereby many were infected with the pestilence, whereof we need not wonder; for the wind blowing, and driuing the exhalations and corrupted vapors from one countrey to another, doeth infect them with the saide pestilence.

In like manner, the euill constitution of the aire, whether the cause be manifest or hidden, may make wounds to become putrified, alter the spirits
and

and the humors, and cause death. This therefore ought not to be attributed vnto the woundes, because that they which are hurt, and those that are not, are both equally infected, and fall into the same inconueniences.

Mounſieur d'*Alechamps* in his French Chirurgery, speaking of these things which hinder the curation of Vlcers, hath not omitted, that when either the pestilence, or any Epidemicall Disease reigneth in any Prouince through the corruption of the Aire, it maketh Vlcers become incurable, or of most difficult curation.

The good old man *Gusdo*, in his Treatise of Vlcers hath also writ, That the wounds of the heade were more harder to cure at *Paris* then at *Auignō*, and that the Vlcers of the legges were more difficult at *Auignon* then at *Paris*, forsomuch as at *Paris* the aire is cold and moist, which is a contrarie thing, especially to wounds in the head. Likewise in *Auignon*, the heate of the aire doe liquefie and subtilize the humors: and therefore, more easilie and in greater abundance do the humors fall into the Legges, whereby the curation of the Vlcers in those partes, is more difficult at *Auignon* then at *Paris*. But if any one alledging experience shall say the contrary, that the wounds in the head are for the most part mortall in hot countreyes: To him I answer, that that proceedeth not from the aire, as it is more hot and dry, but rather because of some superfluous humidity and euil vapor communicated with the aire, as in the places about

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Prouence, and of *Italy* neere vnto the *Mediterranean* sea. Now, there is not a Chirurgeon of so little vnderstanding, that knoweth not but if the aire be hot and moyst, the wounds doe easily degenerate into a Gangrena and putrification. As for experience, I wil giue him a familiar example. Wee see that in hot and moyst weather, and when the Southerly winds blow, that flesh doth putrifie in lesse then two houres, though it were neuer so lately killed, in such sort that Butchers in those times do kill no meate but euen as they sell it. Also there is no doubt to be made but that humane bodies doe fall into affections against Nature, when the qualities of the seasons are peruerted through the euil disposition of the aire: as hath bene seene, that in some yerres, wounded persons haue bin most hard to cure, and oftentimes dyed of very smal wounds, what diligence soeuer the Physitians and Chirurgeians could vse. The which I noted well at the siede which was planted before *Rome*: for the corruption of the aire did alter and corrupt the blood and humors in such sort, by the meanes of inspiration and transpiration, that the wounds became so putrid and fetide, that they sent forth a Cadaverueous smell: and if it hapned that one day had bene omitted wherein they had not bene drest, you shall finde the next day a great companie of wormes in them, with a meruellous stench; from whence were eleuated many putrified vapours, which by their communication with the hart caused a continual Fever, with the Liuer hinderance of

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of the generation of good bloode, and with the Braine they produce alienation of the spirits, fainting, convulsion, vomitings, and by consequence death: and when their bodies were opened, you should finde Apostumes in many partes of their bodies full of a greene stinking Sanies, in such sort that those that were within the Town seeing these things, that their wounded persons could not be cured, saide that those without had poisoned their bullets: and they without saide the like of those within: and then perceyuing that those wounds did rather turne to putrifaction then vnto any good suppuration, I was constraind, and with mee the most part of all the Chirurgeans to leaue suppuratiues, and insted of them to vse the Vnguent *Ægyptiacum*, and other such like remedies, to preuent the said putrifaction & Gangrena, and other of the aforesaide accidents.

Moreouer, if the diuers courses of the heauens haue power and force to imprint a pestilence in vs thorough the influence thereof, why is it not possible that the like may be done in a wound, to infect it after many wayes? Experience it self giueth vs a good and sufficient testimony, not onely in hot weather, but also in winter. For we see that euery patient whether he be wounded, or otherwise disposed against Nature, are tormented more of their greefes when the weather is subiect to raine, then when it is faire weather. And the reason is, because the vapour and moyst aire, and southerne winds, do inwardly mooue and agitate

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the humors which afterwards do discharge themselves vpon the afflicted parts, & thereby increase their paines.

Our Physitian hath also written, that in the battels of Dreux and of S. Denis, which were fought in the winter time, there dyed a great number of men, that I confesse too; but I deny that it was by the application of suppuratiue medicines, or of Corrosiues, but thorough the vehemencie of their wounds, and the disorder that the Bullets made in their members, whereunto the nature of the wounded parts helped greatly, and the temperature of the patient, but aboue all the cold. For the cold causeth wounds to bee of most difficult curation; yea, sometimes it causeth a Gangrena and totall mortification, as witnesseth Hippocrates. And if he had beene with me at the sieged of Metz, he should haue seen many soldiers hauing their legges eschiomened by reason of the colde, and an infinite company of others that died of the colde, although they were not wounded at all. If he will not beleue this, I will but send him to the top of the Mount Senis in the winter time, where many haue lost their liues, and were benumbed and frozen in a moment; witnesse the chappell of Transis, which from thence had that Name giuen it.

He hath in like maner calumnied me, because I compared thunder with Artillery. Truly it may be saide that they haue like effectes: for this Diabolical gun-powder doth such merueilous things that

¹Similitude

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that it is easie to proue a great similitude the one with the other. And first of all, we may compare the fire that we behold to issue forth of the Cannon to the lightning in this, because it is seen before the Thunder is heard, so is it with the other: and this happeneth, because the eare is not so quicke as the eye to receiue their obiects. Wee may also compare the dreadfulness of the reports ² *similitude* of great Ordinance to that of Thunder. For when there is made any notable battery with great Ordinance, their reports are heard sometimes twenty leagues off, more or lesse, according as the windes carrieth the eccho of their noise. The first reports are not heard so plaine, as those that follow; and the cause is, for that the multiplication of the reports following and succeeding one another, that which is nereft doth drive or thrust forward that which is next him, and that in like manner thrusteth forwards the other, and that other the other, vntill it commeth to our eares. In like manner the Bullets are carried by the force of the powder, with such an inestimable swiftnesse, that ³ *similitude* they breake and batter all that they meete with; yea, they haue more force against hard and vnresistable things then against soft things: therein also they do resemble Thunder, which shiuereth the sword in the scabberd, and yet the scabberd remaining whole, melting Siluer in a purse, the purse vnburnt. In like manner (as I haue said here before) hath bene seene many whom the Bullet hath neuer touched, yet neuerthelesse thorough the

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the impetuosity of the aire caused by the violence of the powder issuing out of the mouth of the cannon; hath broke and shiuered the bones, without any manifest apparance of solution of continuitie in the flesh; yea, to haue battered and killed them out-right, as if it had beene with a thunder-clap.

4 *similitude*

Gunpowder also hath a stinking sinell, senting of Brimstone; imitating therein that odour that continueth in that place where a Thunder-bolt hath lately falne; which sinell, is not onely abhorred of men, but also all Animalles are therefore constrained to abandon and forsake their dennes and caues when it hath fallen nere thereunto: so great is that sulphurous stinke that it leaueth behind it.

5 *similitude*

But yet their similitudes is more manifested by the effects of the saide powder; the which beeing enclosed in a Mine, and conuerted into winde or aire by meanes of the fire that is put thereunto, it ouerwhelmeth peeces of earth as great as mountaines, breaketh and demollisheth strong towers, reuerseth mountaines vpside downe. This I haue already manifested by that history which I haue elsewhere written, which was that at Paris; there was scene not long since a sodaine disaster by reason of the powder in the Arcenall, which taking fire, it caused such a great tempest, that it made the whole Towne to shake, ouerwhelming those houses that were neere thereunto, vncovering & vnglasing those that were further from the furie thereof.

Horrible effects of gunpowder.

To be breese, euen as the thunder doth massacre

ere and reuerse men halfe dead here and there, taking from some their sight, from others their hearing, and leaueth others so torne in their members, as if foure horses had drawne them to peeces: and all this through the agitation of the aire into whose substance the saide powder was conuerted. The like acte happened in the Towne of *Malignes*, in the yeere 1546. by the fall of a thunderbolt, within a great and strong Tower, wherein there was a great quantity of Gunpowder, the which did ouerthrow and reuerse almost the one halfe of the Towne, and killed a great number of persons, whereof I sawe a while since many remarkable tokens.

These examples in my opinion are sufficient to content our Physitian, and to shew him that there is a great similitude betweene the effects of Gun-powder and Thunder. Neuerthelesse, I will not for all that confesse that Gunshot is accompanied with poyson and fire as the claps of Thunder: for although they do agree the one with the other, as doth appeare by the former similitudes, it is not in the substance and matter, but in theyr manner of breaking, battering, and dissipating of the objects which they meete, that is to say, the thunder-claps by the meanes of the fire, and the stone engendred therein, and Gunne-shot by the ayre impetuously agitated, which guiding the bullet, causeth the like tempestuous disaster, that the thunder doth. These things considered, may wee not therefore confesse, that those who haue

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writ-

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written that the Cannon shot and Thunder to haue a great similitude together, haue had reason so to do? Finally, this Physitian hath not taken much paines to prooue that Gun-powder was not venomous, and that the bullets are without anie burning at all. Neither in like manner to inuent and name the Instruments proper for the extraction of all strange bodies, because he hath found them already digested in my booke, with manie other things which he hath written, as euerie one may know by comparing his book with mine. He hath also enriched his Book with many sentences and reasons which he hath collected from an Italian Author, named *Bartholomæus Magius*, Physitian of *Bologna*, who hath written sufficiently thereof in a Treatise called *De Vulnerum sclopetorum curatione*, although he doth not acknowledge him for his guide. But hauing traduced him almost word for word, hath made it neuerthelesse his owne, and of a Translator, would bee called Author.

A new kind
of suppura-
tiue.

Now let vs come to his goodly practise and new method to cure wounds made by Gun-shot. First of all, hee would haue applyed suppuratiue Medicines, the which neuerthelesse he doeth not vnderstand to be hot and moist, nor of an empla- sticke substance; but to the contrary, he ordaineth them to be hot and dry, because (saith hee) that this is not of the nature of an Apostume, wherein there is required no other cure but only to sup- purate them. But heere where the woundes are
with

with contusion; many and diuers Indications arise from thence; for so much as the contusion would be concocted and digested, and the wound desiccated. To answer to this, I would send him to learne the nature and quality of suppuratiues in *Galen* in the 5. of Simples, and to take all in his way, vntill hee come to the tenth of his Method, which will teach him, that in complicated diseases he ought to consider the cause, the order, and the vrgent.

Moreover, I would willingly aske of him if hee can heale that wound made by gunshot, vnlesse the Contusion be first suppurate? I think not: and herein I refer my selfe to the iudgment of al good practitioners; and therefore our *Basilicon* and *Oleum Castellorum*, and other such suppuratiue medicines, are proper to suppurate such woundes as are made by Gun-shot. Secondly, he would haue *Oxyeratium* put into the wound to stanch the fluxe of blood: and if by that means it cannot be stopped, to apply thereon a medicine made of the white of an Egge, Bole Armoniacke, Rose-vinegar and Salt. I leaue you to consider whither such like remedies haue power to stay the flux of bloud or no, they being put within the wound. Truly they will rather make it flow more, because that the vinegar is of a gnawing and subtile qualitie, causing paine, defluxion, inflammation, & other euill accidents, as I haue knowne by experience: and I know no Chirurgeon that hath beene exercised in his Art, will follow such a kinde of pra-

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life, least he finde himselfe deceiued in the end. To this purpose I do remember that I had a *Moor* in cure, who belonged to Mounsieur the Earle of *Rosissy*, who was hurt before *Bologne* by an English man, who gaue him a wound with a Lance thorow the backe: whereuppon, to stay the Fluxe of blood, I put into the wound a restrictiue, wherein there was Vinegar insted of another, but presently after he came to me againe, telling me that he thought he had had fire in his arme, which caused me to dresse him anew, and to change the medicine of his wound, and to apply the saide restrictiue vppon it. I beleeeue that this Physitian knew not so much, otherwise I esteeme him so honest a man that I thinke he would not haue put it in his Booke for a good restrictiue.

Moreouer, hee commendeth aboue all other things his Balme made of the oile of wax & myrrh beaten together with the yolke of an Egge, or rather the naturall Balsome which is brought from *Perru*, and saith, that they do consume the superfluous humidity of those wounds, whereby they preuent the happening of any perillous accident. Neuerthelesse, he saith, that they do vnite & consolidate those kinde of wounds, as they do which are incised. Truly it seemeth very strange to mee, to see that any would go about to dresse and cure contused wounds, as simple woundes which demand nothing but vnion. Ouer and besides, these Balmes canot be proper in wounds made by gunshot, because that by reason of their siccitie they doe

doe hinder suppuration, without the vvhich they cannot be cured. And if they be needfull at all, it is onely after that the contusion is suppurated, & the wound mundified: and then I know not where we should finde so many extractors of quintessences to extract and prepare so many Balmes as shall be needfull to dresse those souldiers which shall be hurt in the assault of a Town, or a skirmish in battell? Neither vvhether they shall get mony sufficient to counteruaile the charge thereof.

A pleasant
answer, and
to the purpose!

Let vs come to the rest. He ordaineth that these Balmes should be instilled into the vvounds without Tents, yet afterwards remembering himselfe, he saith, that it would be very good to put within them a little short one, onely to keepe the Orifice of the wound open. How is it possible that these Balmes and Vnguents should bee conueyed into the bottome of the wound without Tents or Setons, whose vse is principally to carry medicines vnto the bottome of wounds, and to keepe them open to giue issue vnto all strange bodies? All good practisers will neuer agree with him in this point, nor those which know what it is to handle such wounds.

Now there is yet another thing worthy to bee well noted, and that is this: After that he had reproved the Vnguent of Egyptiacum, hee neuertheless forgetting himselfe, commandeth it to be applyed from the beginning vntill the wound bee altogether suppurated, and to be thus vsed. Take (saith he) of Egyptiacum dissolved in a decocti-

on

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on made of the tops of VVormwood, and of Hypericon, and of the lesser Centaury and Plantain, and this to be iniected into the wound. He describeth after that another, made of Plantane water, and hony of Roses boiled together vnto the thicknesse of hony, and then scumming of it wel, therewithall mixe Egyptiacum in equall parts: & (saith he) this vnguent doth suppurate those VVoundes which are made by Gun-shot, I leaue the experimented Chirurgicall Readers to iudge whether such remedies be suppuratiue or not. As for me I do esteeme them to bee proper to mundifie and clense, and not to suppurate. He finally writeth, that the wound ought not to be dressed but once in foure dayes, and where there shall bee fracture of the bones once in eight dayes. He saith moreover in another place, that it is conuenient to instill euery day ten or twelue drops of balme into the wound. Truly this doctrine serueth rather to confound the yong Chirurgeon, as not knowing what manner of practise hee should followe: for whosoever should follow his, I am well assured he will open often both the heauens and the earth; the heauens to receiue their soules, and the earth their bodies.

Euill practi-
sers do open
both the
heauens and
the earth.

But wee haue spoken enough of this matter for this time, inasmuch as I am well assured, that these small cauilations shall nothing at all diminish the reputation of my Booke, which is by strangers so much esteemed, that they haue translated it into their owne mother tongues, therby to haue com-
mu-

Wounds made by Gunshot.

III

nication therewith. Therefore now we wil bid our Physitian farewell, but first would pray him to review and correct his Booke as soone as he could, to the end that the yong Chirurgeon bee no longer retained in those errors which they may apprehend by reading therein : for the Shortest folioes are the best.

CHAP. XVI.

Another Discourse about the question of the venenosity of wounds made by Gunshot.

Not many moneths since, I chanced to bee in the company of many learned Physitians and expert Chirurgeans, who by way of discourse began to put the venenosity of woundes made by Gun-shot; they principally struing by five Reasons to proue that venenosity may bee conioined with those woundes, not because of the powder, which they confesse with mee to be free from venome or poison both in the composition and essence thereof, but by reason of the bullet, within the which poyson may be infused, mixed, and incorporated.

The first reason is, because that Leade is verie rare and spongeous, as the facility of the dissolving and softnesse thereof do shew, and therefore by consequence very easie to receiue the imbibition or infusion of any venomous liquor. I answer that that consequence seemeth to me to bee but of small assurance : for in all artificiall mixtions, as

Reason.

Answer.

is

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is that whereof we speake, there are two things to be considered; the matter of the bodies which enter into the commixtion; and the forme according to the matter. Such bodies ought eyther to be liquid, or soft, or brittle, and easie to bee diuided into small portions; to the end, that altogether and on euery part, they may meete, ioyne, and vnite. According to the forme they ought to be al-liable and computible th'one with the other. This is euidently knowne by the water, which though it be easie to mix with an infinit number of other things, yet neuerthelesse they cannot bee mixed together, by the reason of the antipathy of their formes. So Golde and Siluer are so amorous of Lead, that when they are to bee dissolued, they are mingled therewith; but Brasse doth flye from Lead as much as gold and siluer do fly from Tin. If therefore Lead and Brasse be melted together, they can by no meanes be mixed together, thogh both are contained vnder Metallicke kinds. How then can there be incorporated with Lead any venomous thing, being different both in forme and kinde?

2 Reason.

Answer.

Let vs come to the second reason. Iron (they say) which is more hard, solid and compact, may neuerthelesse receiue a certaine venomous quality, as we see by impoysoned Arrowes, whereof our Ancestors haue heeretofore vsed; and therefore Lead (by more reason) may receiue the like venomous quality. To answer to that, I confesse that the poyson may well bee receiued on the superfi-

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perfcies of the Iron, but not in the inwarde substance thereof, by way of commixtion. Now here the question is of incorporation, and not of a simple infusion or Vnction.

Let vs heare the third reason. Although that ^{3 Reason} Lead (say they) when it is melted, doeth leaue behinde it a kinde of grosse excrement: neuertheless, it is not therefore made vnapt to receiue the infusion of any straunge substance. For, euen as steele a mettall amongst all others the most solid, doeth receiue in the woorking thereof, a temper which doeth harden it of a cleane contrarie substance. For answer (I say) that when the temper is giuen to steele, it is not receiued within the inward substance thereof; for, if such a thing were necessary for the hardning thereof, it might bee easier done at that time when it is first drawn and melted, then to giue it the Temper, it would better incorporate therewith then afterwards when it is taken and consolidate into a barre. This answer shall likewise serue to confute the fourth reason, by the which (say they) that the iuice of *Napellus* and *Rhododendron* or *Apium risus*, and such like, who of their whole substance, do hurt & corrupt ours beeing mingled with Lead, there may thereby be made such a venomous commixtion; that those wounds which it maketh, must of necessity become venomous. I say to the contrarie, ^{Answer} that the mixture is only of things which may not onely be applyed, but also fixed, incorporated, & vnited the one to the other. Now how can water

R

or

The Method of curing

or any other liquid iuyce only be made to adhere and cleaue to Lead which is hard & solid, I meane in that fashion that they may be vnited: the variety heereof may bee iudged better by experience, then by reason. Cause Lead to be melted within the iuices heretofore recited, or any other that you will choose (hauing first weighed them seuerally) and you shall finde the iust measure of the iuices, and the true waight of the Lead, as they were before: a most euident signe, that no part of the Lead is incorporated with the iuyces, nor the iuyces to haue lost any of their substance.

S Reason.

The fift reason is this; The Bullet shot out of a Musket against a stone or any bodye of the like hardnesse, is not thereby so much heated, but that it may neuerthelesse be handled in the bare hand though it be taken presently after it was shot: and therefore it is false to affirme, that the poyson infused in the Bullet, may be consumed by the fire of the flaming powder. I answer, you must note that when I said that although the Bullet may be handled, neuerthelesse, the fire would consume the force of the poyson; my meaning was, not the fire of the flaming powder, when the Musket is shot off, but that fire which is vsed to incorporate the molten Lead with the sayde poyson, the which immediately working vpon the poyson, being not yet wholly enwrapped and couered in any strange body, and hauing time and leysure to worke that effect, and not at an instant and altogether, it may if not consume, yet at the least greatly abate the
for-

Answer.

Wounds made by Gun-shot.

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forces of the said poyson. Those that wil not content themselves with these reasons, let them read *Matthiolus* vpon the Preface of his sixt Booke of *Dietscorides*. There are (sayth he) of late men so ignorant and foolish, that they do cause to cast amongst their Gold and Siluer when it is melted, wherewith they intend to make any drinking vessels of Treacle, Methridate, and other Antidotes, to the end these mettals hauing acquired euen at the beginning the vertues of the aforesaid Antidotes may resist all poisons. But howe ridiculous and foolish this opinion is, they themselves may iudge, if they haue but any mean knowledge of naturall things, and principally of Mettals. And therefore, there shall not neede a more euident refutation. Behold the reasons, behold the authority, which haue retained in my first opinion, that wounds made by Gunne-shot are not conioyned with any venenesity.

A great Annotation.

Heere let not the Reader build too much on the opinion of *Ambrose Parie*; for I thinke there is not any Chirurgeon that will deny but that a bullet may bee poysoned, notwithstanding the former reasons, which I leaue to be considered by the iudicious and experienced Chirurgeon.

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CHAP. XVII.

The differences betweene such wounds which are made by arrowes, and those made by Gunshot.

THese wounds which are made by Arrowes, Crosse-bow shot, or such like Instruments, do differ in two things from those which are made by Gunshot and other fierie Engines. For sometimes they are found without Contusion, which neuer hapneth to wounds made by Gunne-shot. Often times also they are empoysoned, and according to these two differences, their curations ought to be diuersified. Now let vs consider the differences of Arrowes and Darts, because that consideration serueth greatly vnto the knowledge and curation of the said wounds.

CHAP. XVIII.

Of the differences of arrowes and Darts.

ARrowes and Dartes doe differ in matter, in forme or figure, in magnitude, in number, in manner, and faculty or vertue. Their differences in matter is, some of them are of Wood, others of Canes or Reeds: some of them haue their extremities or heads garnished with Iron, Tinne, Lead, Brasse, Horne, Glasse, or of bone, and others not. Their differences in forme are, some of them are round, others angular, others sharpe, others

thers barbed; some of them hauing their pointes turned backwardes, and some haue it diuided into two parts: some are made broad in their heads and cutting like a knife, and in many other forms and fashions innumerable. As for their magnitude, some of their heads are of three fingers in length; others of a smaller size. Their number causeth a difference herein; because that some are simple, hauing but one point onely; others are composed into two or many. Also in them their manner is to be considered; for some of them haue the Iron or head inserted within the woode of the Arrow, and of others the Arrow is inserted into the head. Some heades are fixed and nayled vnto the shaft, and others not; but haue so little hold, that in drawing them forth, their heads remayne behinde in the wounds, whereby they become more dangerous. Their faculty maketh them also to differ in this, because that some are (as hath bene saide) empoysoned, and others not. Such are the speciall and proper differences of Arrowes and Darts: according to the which, the dispositions which they leaue behinde them, doeth diuersifie their curation. Thou mayst behold by this following figure the aforesaid differences.

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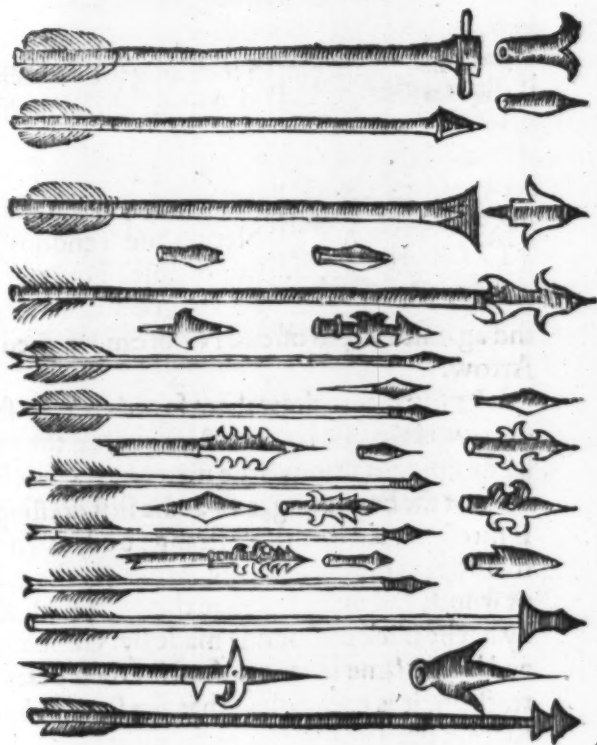
CHAP. XIX.

Of the differences of the wounded partes.

Necessarie
iudg. ment
to auoyde
scandall.

THese differences exposed. Now wee must consequently speak of the diuersity of the affected parts, which are either fleshy or bony; some of them are neere the ioynts, others within them. Some with a great Flux of bloode, and fracture of the bones, others not. Some of them in the principall members, or in parts seruing them; some are deepe, others but superficiall. And if in anie of these woundes there appeare any manifest signes of death, you ought to make a true & sure iudgement thereof, before you meddle there-with, to the end that there be no occasion giuen vnto the ignorant people to speake euill of our Art. Now, to leaue the Arrow in the body, would cause vneuitable death, and the Chirurgeon would be esteemed vn pittifull and inhumane, and by drawing it forth the Patient may peradventure escape. For, as wee haue saide, it is better to attempt a doubtful remedy, then to let the Patient dye, without any succour at all.

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The Method of curing

CHAP. XX.

Of the extraction of Arrowes.



Stouching the extraction of Arrowes, you ought to auoyde the incising, dila-
cerating, and breaking of the Veines, and Arteries, Nerues and Tendons, if it be possible. For it would be an ignominious thing and against Art, to offend Nature more then the Arrow.

The manner to draw them soorth is two-fold; the one of them is by extraction, and the other by thrusting it through the member. Therefore, euen at the beginning, and at the first dressing, it is fittest to take soorth all strange bodyes (if anie therebe) as the heads of the Arrowes, the shafte or wood, and other such like things, as hath already beene saide of wounds made by Gunne shot, and by the same meanes. And for their better extraction, it is conuenient that the Patient bee situate in the same figure and posture, as at that time when he was hurt, because of the Reasons aforesaide (if it be possible) and then to vse instruments proper to that effect: as principally this following, which hath an hollow quill or pipe di-
uided in the middle, the outward part toothed; into the which is inserted a rod, like vnto the *Tire-
fond*

Wounds made by Gun-shot.

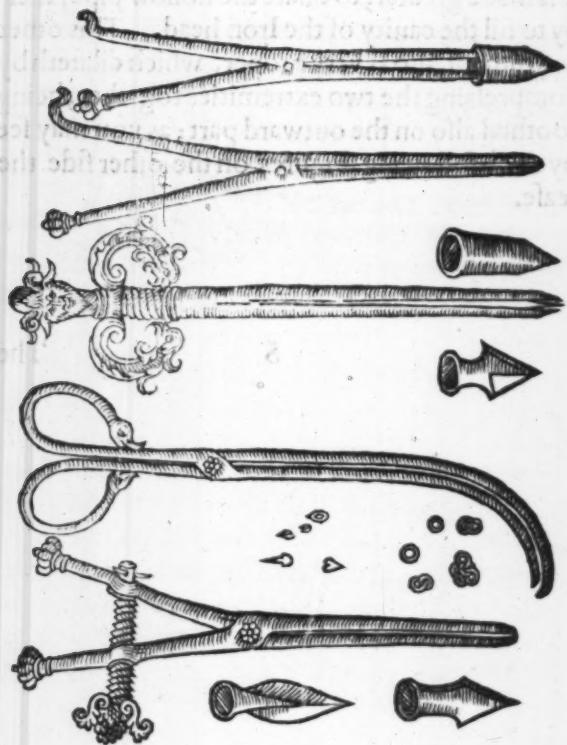
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fond of Gun-shot, as hath beene figured heere before, excepting onely that this is not made with a Scrue in the extreamity or end thereof. Also it is made greater, to dilate the hollow pipe, thereby to fill the cavity of the Iron head. This other Instrument also is very proper, which dilateth by compressing the two extremities together, being toothed also on the outward part; as you may see by these following Figures on the other side the leafe.



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Wounds made by Gunshot.

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The first Instrument is opened by meanes of a Vice, which is inserted within the hollowe Pipe thereof.

The second Instrument doeth dilate, by compressing the two ends together.

The signes whereby you may know where the Iron head is, that if you feele with your hande on that part where it is, you shall perceiue an asperity and inequality. Also the flesh wil appeare contused, liuid, and blacke, and the Patient will feele an heauinesse and continuall paine in the wounded part.

The other two Instruments are called Tena-
cles, with a Vice, together with a Crowes bill:
and is very commodious to draw forth the heads
of Arrowes, and to extract foorth Maile and o-
ther smaller bodies.

This Instrument vnderneath, is another small
Hooke to draw forth Maile, or any other strange
body, that it cannot meete with: which also may
serue thy turne for the same effect, in the woundes
of Gun-shor.



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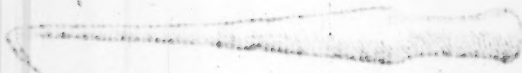
The Method of curing

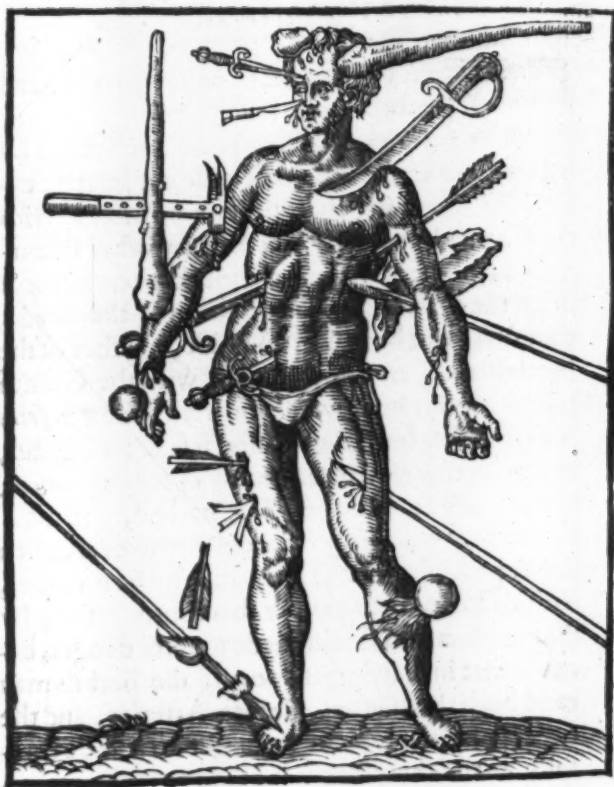
But if it come to passe that the head bee barbed, whether it be of an Arrow, Pike, Dart, or Lance, and shall abide in any part of the bodye. As for example, in the Thighe or Legge, together with some portion of the wood broken therein, in that case the Chirurgeon shall cut away the woode or shaft as close as hee can, with incising or cutting Tenacles. Afterwardes he may draw foorth the head with Tenacles that are toothed, as you may see by the figure before going.

Hippocrates in the fift of his *Epidemics* saith, That he hath drawne forth the head of an Arrow sixe yeares after it was shot, it being lodged nere vnto the Groine.

The other two Instruments are called Forceps, and are used together with a Crowe, and are connected to draw forth the head of an Arrow, and to extract toothed barbed Instruments.

This Instrument vnderstand is another Forceps, which is used to draw forth the head of an Arrow, or any other Instrument, which cannot move with the hand, but must be drawn forth with the Forceps, and is used for the same effect in the wound as the other.





The Method of curing

CHAP. XXI.

*How you ought to proceede in drawing forth
broken Arrowes.*

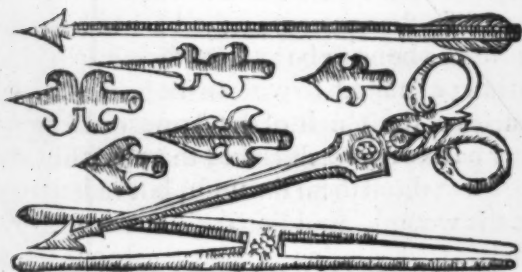


BV T if it come to passe, that the head is broken, in such sort that it cannot by any meanes bee apprehended by the aforesaide Tenacles, let it be extracted then (if it be possible) with the Cranes bill, or Crowes bill, or other Instruments, that haue beene described heere before: but if the shaft be broken off so neere the heade, that there can bee taken no holde, neyther of the head thereof, nor of the shaft, with the Cranes bill, then let it be drawne forth with the *Tirefond* of Gun-shot, for if it will insert it selfe into Lead, by a greater reason it may easily enter into wood. In like manner, if the head bee barbed, as most commonly your English mens Arrowes are, then if it be possible, thrust it thorough the member, with an Instrument proper thereunto. For, by that meanes you shall auoyde greater danger, because that in drawing it forth, the Barbils may rend both the Nerues, Veines, Arteries, and the other parts, the which you ought to auoide carefully. And therefore it is better to make a counter-Orifice on the other part, iust oueragainst the wound, and so to thrust it cleane through. For, it may be supposed, that there is but a little thickenesse to incise; so by this meanes, and with lesse dan-

danger the wounde will haue a double yssue; the one on the former part, and the other on the hinder part; and will therefore heale sooner, because you may apply your medicines both on the one side, and on the other, and it will also mundifie better. To the contrary, if the barbed head happen vpon a bone, or be inserted therein, which oftentimes commeth to passe in the bottome of the Muscles of the Thigh, of the Arme, or Legge, or other parts of great distance, there it is not conuenient to thrust them through, but rather to dilate the wound, auoiding the Nerues and great vessels, as the good and expert Anatomical Chirurgeon ought to do, and then gently and orderly to apply therein a Dilatory hollow in the inward part thereof, and so to place it, that it may apprehend the two Barbils of the Iron head: then with the Cranes bill it may be held steddy, and so draw them forth all three together, as this figure following sheweth thee.

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A Dilatory which hath a certaine cavity in the inward part thereof, with the Cranes bill holding a barbed head.



CHAP. XXII.

What ought to be done when the Arrow is inserted into the bone.



Now, if it happen that the Arrow is so inserted and fixed in the Bone, that it cannot be taken soorth by thrusting it thorough the member, but by drawing it soorth by the same way that it entered in, you ought then to mooue and stirre it too & fro discretely if it sticke fast in the bone, wherein an especially care ought to be taken that you breake not the Arrowe, and so leaue some part thereof sticking in the bone; from whence might ensue many dangerous accidents. This operation may be done by the Instrument named the Crowes-bill, or by others heere before figured presently after

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after the extraction of the Arrowe. Suffer the wound to bleed sufficiently, taking your Indication from the strength or vertue of the Patient, to the end that the part may thereby bee discharged, and lesse mollested with inflammation, putrification, and other euil accidents. The extraction being done, at the first dressing, if the wound be simple, thou shalt handle it as a simple wound: but if it bee with complication, thou shalt then cure them according as you shall finde the dispositions complicated, to appease the paine, thou mayest to thy great profite apply *Oleum Catellinum* of our description heere before declared, & to ouercome other accidents which may happen in thy cure, thou shalt haue recourse vnto our former Bookes of woundes in generall, and of those made by Gun-shot.

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CHAP. XXIII.

Of venomous or empoysoned wounds.

NOW there remaineth to vnderstand and consider, that these woundes are sometimes empoysoned (as we haue saide) and that it proceedeth from the primitiue cause of the Arrowes so prepared by the enemy. This may easily be known both by the report of the hurt person, saying, that he feeleth a great and pricking paine as if hee had bene stung with Bees (especially if the poison wer hot, which is most vsed in that case) and also by the desh of the wounded part, which presently after becommeth pale and liuide, with a certaine appearance of mortification: wherunto also there doth happen many other grieues, and greater accidents, which are not accustomed to happen in all other wounds, wherein there is not any venomosity. Wherefore at the beginning (after that you haue extracted soorth all the strange bodies, if any there be) you ought to make diuers deepe scarifications all about the wound, and to set ventoses thereon with a great flame, thereby to make attraction and euacuation of the virulent matter. In like manner, the sayd attraction may be done, by causing the wound to bee sucked by another man, hauing in the meane time a little Oyle in his mouth, wherein you must haue a care that hee haue not any Vlcer therein, for feare lest that the poyson so sucked and attracted cleaue not thereunto

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unto. Also attraction may bee made by the application of Vnguent, Cataplasmes, Emplaysters, Vesicatories, Cauteries, and other things, which shall be declared heereafter in our particular Booke intreating of the bitings and stingings of venomous Beasts.

FINIS.



Faults escaped.

Page 9. line 17. for Sir, read Saint. p. 15. l. 20. for practises r. pruritics. p. 52. l. 22. for induring, read inducing. p. 55. l. 11. for Escharotick, r. Escharotick. p. ibid. l. 16. for indured, r. induced. p. 59. l. 30. for cooling r. rowling. pag. 60. l. 21. r. the yolke of Egges. p. 75. l. 23. for nautotick r. narcotick. p. 85. l. 3. for staples r. Stuphes. p. 90. l. 15. for Lerine, r. lexiue. p. 104. l. 19. for eschiomened r. estiomened.



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THe diu'sion of wounds according to the diuerſitie of the parts offended, and the Bullets where-with they were made. Chap. 1.

Of the ſignes of the wounds made by Gunſhot.

Chap. 2.

The manner of handling thoſe wounds at the firſt dreſſing.

Chap. 3.

A deſcription of ſuch Inſtruments which are proper to extract Bullets, and other unnaturall things of the body.

Chap. 4.

The maner to handle thoſe wounds at the firſt dreſſing after the unnaturall things are forth.

Chap. 6.

The maner to extract ſuch unnaturall things which ſhall be left in the body after the firſt extraction.

Ch. 7.

Indications which ought to be obſerved in the ſaide wounds.

Chap. 8.

How and in what manner diſeaſes are complicated

Chap. 9.

How the Chirurgean ought to proſecute the handling of the aforeſaid wounds.

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Of Bullets which do remaine in the certaine parts of the bodye, a long time after the curation of the wounds.

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